Mining CONGRESS JOURNAL

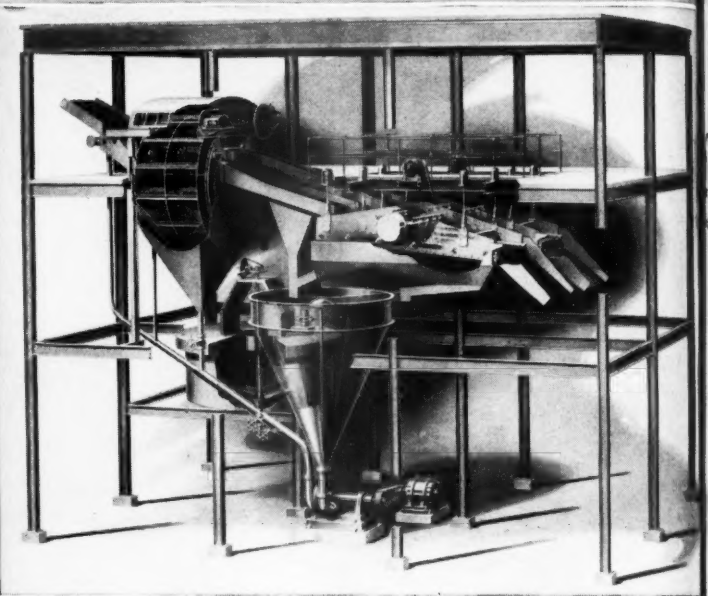
AMERICAN MINING CONGRESS

APRIL
1949

Cleveland, Ohio —**1949 COAL SHOW**— *May 9-12*

SEE HOW IT WORKS - at Cleveland

A SOUND MOVIE ON THE NEW LINK-BELT FLOAT-SINK CONCENTRATOR FOR HEAVY-MEDIA



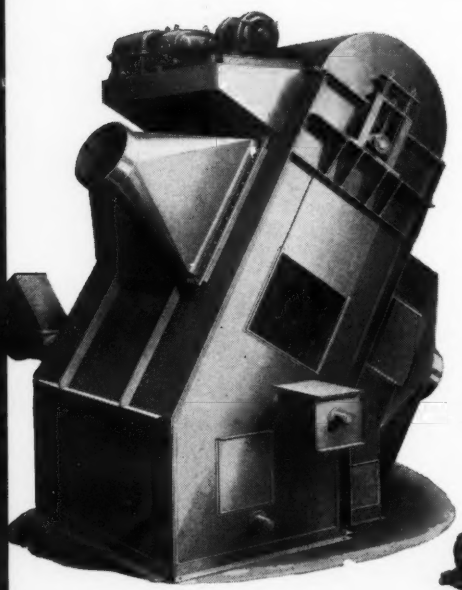
Visit Booths 1613-1615-1625

• Here is an opportunity to see the inner workings of the Link-Belt Concentrator and allied equipment for Heavy-Media coal cleaning. Link-Belt will show in booths 1613-1615 and 1625, a professionally produced sound movie in color, at the 1949 Coal Show of the American Mining Congress, May 9-12, Public Auditorium, Cleveland, Ohio.

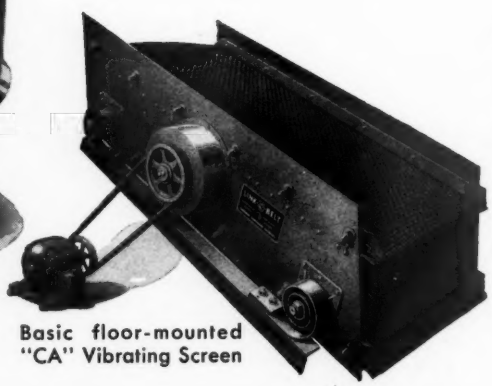
There will also be in actual operation, a Multi-Louvre dryer, designed for highest efficiency in drying coal after wet cleaning, and for better air cleaning when fines are air cleaned at mines with prevalent moisture.

Also an operating unit of the Link-Belt "CA" Concentric Action Vibrating Screen, which is making quite a record for itself in coal preparation.

In addition to the above, our exhibit will cover the entire Link-Belt line of coal handling and preparation equipment—the famous Link-Belt line of mechanical power transmission machinery and Link-Belt Speeder shovels-cranes-draglines. You are cordially invited to make our exhibit your headquarters.



Link-Belt Multi-Louvre heat dryer.



Basic floor-mounted "CA" Vibrating Screen

11.48

LINK-BELT COMPANY

Chicago 9, Philadelphia 40, Pittsburgh 13, Wilkes-Barre, Huntington, W. Va., Denver 2, Kansas City 6, Mo., Cleveland 15, Indianapolis 6, Louisville 2, Birmingham 3, St. Louis 1, Seattle 4, Toronto 8.

COAL PREPARATION AND HANDLING EQUIPMENT

Engineered and Built by LINK-BELT

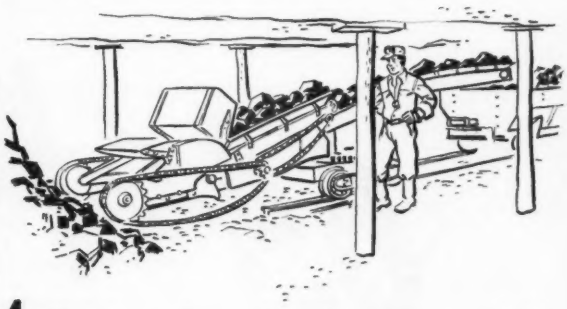
Coal Facts #1..

..A ONE MINUTE QUIZ ...FOR MEN IN THE COAL INDUSTRY

1. When was COAL first put to use by a civilized people?

2. When was the first seam of COAL discovered in America?

3. When was the first commercial COAL Mine started in America?



4. When was the world's first successful COAL loading machine made?

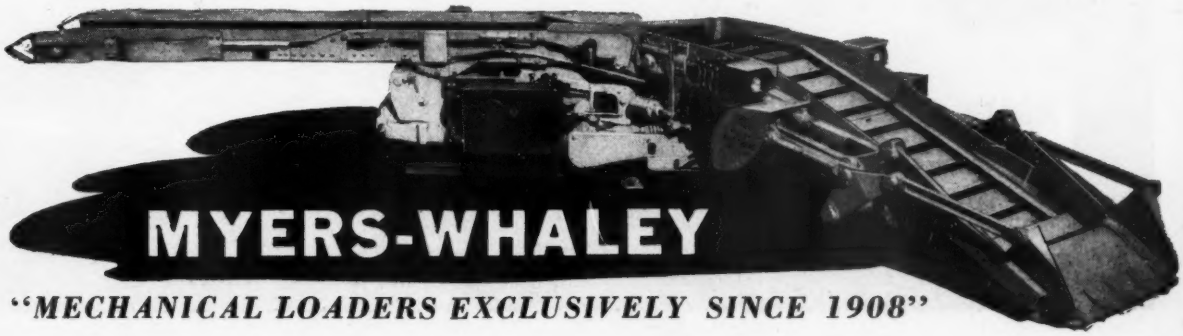
Answers:

1. The earliest written record places the time at 300 B.C. (2249 years ago) when ancient Greek Smiths burned "black stones" called "anthraces" according to the writings of the Greek Philosopher Theophrastus.

2. In 1673 the French explorers Joliet and Marquette found a large outcropping of coal near the site of Utica, Illinois. This was the first discovery of coal in North America by white men.

3. In 1750 a mine was opened on the James River near Richmond, Va. This mine used slave labor and was a success from the outset. The original bed still produces a high quality bituminous coal.

4. In 1908 the quest for a commercially successful loading machine was completed when Myers-Whaley produced their first "shoveling machine." While this original "shoveling machine" was no match for comparison with the sleek, modern-day Whaley "Automat," its shovel-action principle was sound enough to revolutionize the coal mining industry. Today, the Whaley "Automat," thanks to its dependable action, is still a leader in its field, delivering big coal capacity . . . safely . . . swiftly . . . smoothly . . . at amazing savings in power and maintenance. It is versatile too . . . does development work, cleans up falls, and handles coal, rock or slate with equal efficiency. Myers-Whaley, Knoxville 6, Tennessee.



MYERS-WHALEY

"MECHANICAL LOADERS EXCLUSIVELY SINCE 1908"

Power cost— 6.4¢ per ton!

This G-E portable rectifier, one of three in the Shamrock No. 1 mine of the Truax-Traer Coal Co., is rated at 300-kw, 275-v d-c, and designed for 4000-volt and grounded negative operation. The units have needed little or no maintenance since their installation except for tube replacement and periodic inspection.

Economical G-E mercury-arc rectifiers helped keep power costs down to this low figure, are quickly relocated at little expense, offer no maintenance problems, says Mr. Howard Petty, Electrical Superintendent, Truax-Traer Coal Company.

In June 1946 the Truax-Traer Coal Company installed a General Electric portable, sealed-ignitron mercury-arc rectifier in its Shamrock No. 1 mine at Kayford, West Virginia. Two identical units were added in March 1947. For sixteen hours per day, seven days per week, these rectifiers have been in continuous operation, available for service practically 100 per cent of the time.

Because of the advantages offered by General Electric mercury-arc rectifiers, Truax-Traer has now ordered four more equipments of latest design. With these in service, *all* power for this mine will be supplied by G-E portable sealed-ignitron mercury-arc rectifiers.

Why not check how G-E mercury-arc rectifiers can cut *your* over-all mining costs per ton? A wide range of ratings is available. For more details, send for Bulletin GEA-4047. *Apparatus Department, General Electric Co., Schenectady 5, New York.*

According to Mr. Howard Petty, the Company's electrical superintendent, G-E mercury-arc rectifiers have provided the following advantages:

1. **LOW POWER COSTS.** The three units helped to keep power costs at an all-time low: only 6.4¢ per ton.
2. **FAST, ECONOMICAL RE-LOCATION.** After a place is prepared, the entire unit is moved and back in service in only four hours.
3. **MINIMUM MAINTENANCE.** No major rotating parts.
4. **EASY PORTABILITY.** Entire unit can be moved close to the working face.
5. **PERSONNEL SAFETY.** Units are completely enclosed to prevent accidental contact.
6. **HIGH OVERLOAD CAPACITY.** The equipment can be operated at 150% of rated maximum load without damage.
7. **LOW-SLUNG DESIGN.** Maximum height of only 48 inches permits these compact units to be used in cramped areas. (Standard 42-inch units also available.)
8. **DEAD-FRONT PANELS.** Give maximum personnel protection, as well as keep out coal dust and dirt.

THREE INTEGRATED CAR UNITS make up a G-E portable mercury-arc rectifier. Compact and efficient, this equipment permits conversion from a-c to d-c thousands of feet closer to the working face. It makes long, low-voltage d-c feeders unnecessary, assures full voltage at the working face for efficient operation of locomotives, cutters, loaders and other mining machines.

A-c switchgear car

Transformer car

Rectifier d-c switchgear car

GENERAL ELECTRIC

693-1

GOING OVER WITHOUT A BANG!

Using an oscillograph to measure the accuracy and precision of timing of AMERICAN *Split-Second Electric Blasting Caps.*

AMERICAN CYANAMID COMPANY

EXPLOSIVES

For better breakage with minimum vibration...
AMERICAN Split-Second Electric Blasting Caps

With a *c-cruump* instead of a *bang,* AMERICAN Split-Second Electric Blasting Caps give a close sequence of explosions in one general blast—resulting in better fragmentation with minimized vibrations.

These Split-Second Electric Blasting Caps were developed and perfected by AMERICAN research. They are produced with great technical skill by the most modern manufacturing methods ... and are available to meet your specific blasting needs. Their use helps you obtain increased tonnage of properly sized material ... placed where you want it ... with maximum speed and economy.

Remember, *whatever* your requirement, there is an AMERICAN Explosive to meet it.

Capable Field Engineers Are Available At Your Call

★ HIGH EXPLOSIVES ★ PERMISSIBLES ★ BLASTING POWDER ★ BLASTING ACCESSORIES

AMERICAN Cyanamid COMPANY

EXPLOSIVES DEPARTMENT

30 ROCKEFELLER PLAZA • NEW YORK 20, N. Y.

SALES OFFICES: PITTSBURGH, PA. • BLUEFIELD, W. VA. • SCRANTON, PA. • CHICAGO, ILL. • POTTSVILLE, PA. • MAYNARD, MASS.

JULIAN D. CONOVER
Editorial Director

SHELDON P. WIMPFEN
Editor

Associate Editors
A. W. DICKINSON
G. B. SOUTHWARD
H. L. MOFFETT

Production
B. C. WILKERSON

Mining CONGRESS JOURNAL

Advertising
P. D. MCMURRER, Mgr.

FRANK W. MORAN
(Chicago)

RALPH F. DUYSTERS
(New York City)

RALPH W. HARKER
(Los Angeles and San Francisco)

Contents

VOLUME 35, NUMBER 4 FOR APRIL, 1949

PAGE

FRONT COVER: Covered suspension bridge will carry raw coal across Monongahela River to Jones & Laughlin's new preparation plant.

EDITORIALS 37

WORLD'S LARGEST PREPARATION PLANT NEARS COMPLETION 38
By GEORGE P. FULTON

1949 COAL CONVENTION AND EXPOSITION 43
Program 48-49
Exhibitors 57

BLASTING RAISE ROUNDS WITH MILLISECOND DELAYS 70
By WING G. AGNEW

CURRENT PRACTICES IN ANTHRACITE STRIP MINING 82
By C. E. BROWN

IMA MINE RESUMES OPERATONS 88
By J. A. MECIA

SAFETY EDUCATON—A SUGGESTED PROGRAM 93
By E. R. PRICE

WHEELS OF GOVERNMENT 101

PERSONALS 111

NEWS AND VIEWS 115

MANUFACTURERS FORUM 138

Opinions expressed by authors within these pages are their own, and do not necessarily represent those of the American Mining Congress

Indexed regularly by Engineering Index, Inc.

Copyright 1949, by

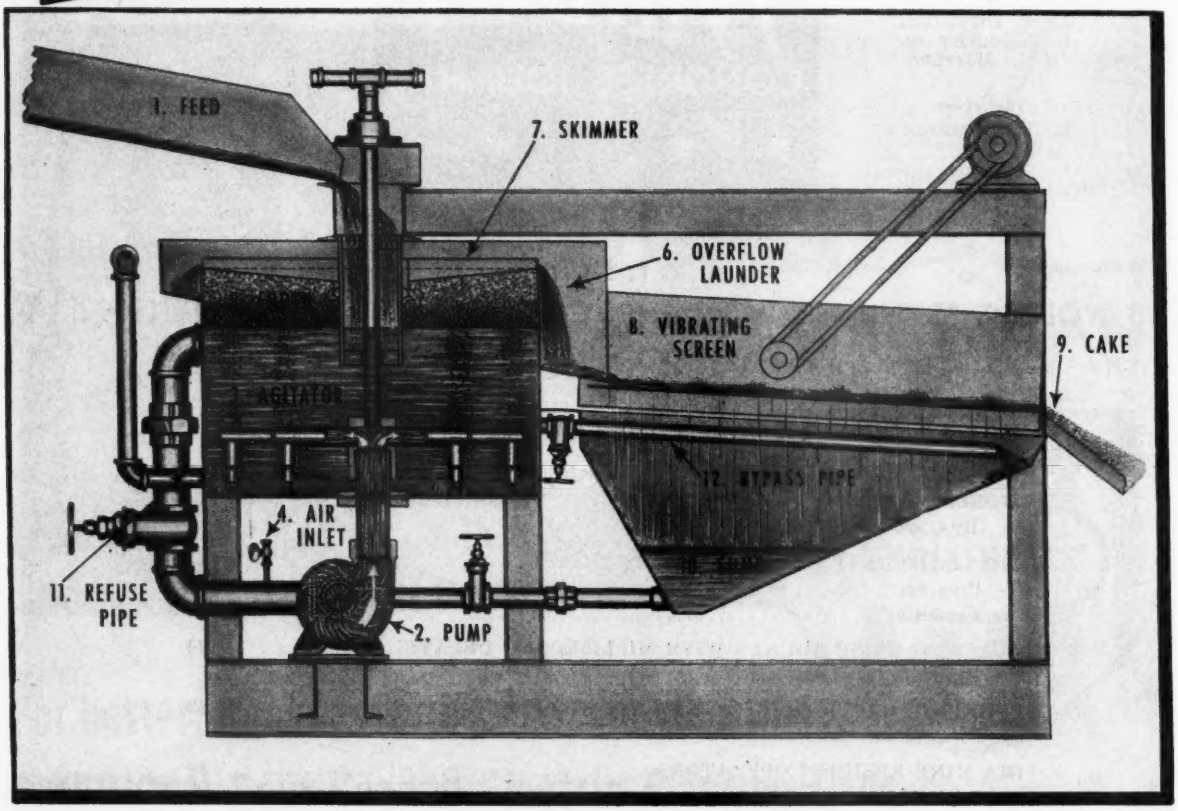
THE AMERICAN MINING CONGRESS
1102 RING BLDG., WASHINGTON 6, D. C.

HOWARD I. YOUNG, *President* · DONALD A. CALLAHAN, *Vice President* · ANDREW FLETCHER, *Vice President* · JAMES D. FRANCIS, *Vice President* · JULIAN D. CONOVER, *Secretary*

Published Monthly. Yearly subscriptions, United States, Canada, Central and South America, $3.00. Foreign, $5.00. Single copies, $0.30. February Annual Review Issue, $1.00. Entered as Second-class Matter, January 30, 1915, at the Post Office at Washington, D. C.

Member Audit Bureau of Circulations.

NEW ...the R AND S FROTH



Here's How You Recover Marketable Coal from Sludge Ordinarily Worthless . . . with the R and S Froth Flotation Hydrotator

1. After suitable conditioning, coal enters tank through Feed Chute and Feed Well.

2. Circulating Pump takes water from side of main tank and delivers it to tank bottom through . . .

3. Agitator, which distributes circulating water and coal uniformly over tank bottom, from where they rise to pump intake level.

4. Air is drawn into pump through a valve, is distributed over bottom with water and coal. Coal rises with air bubble as . . .

5. Froth, which overflows into . . .

6. Overflow Launder, with aid of . . .

7. Skimmer, attached to rotating Feed Well and Agitator. Froth flows to . . .

8. Vibrating Screen, which "kills" froth and delivers it as . . .

9. Cake (low ash and dewatered).

Water and entrained high ash coal, together with excess reagent, pass screen to . . .

10. Sump, where they join pump circulation and are returned to main tank.

11. Refuse, with all excess water from feed, is discharged from tank bottom by adjustable tube which controls level of water below frothing zone.

12. Bypass pipe to provide sluicing water.

FLOTATION HYDROTATOR

★ Recovers marketable coal from sludge ordinarily worthless

★ Recovers coal without settling

★ Minimizes pollution of streams and rivers

The new R and S Froth Flotation Hydrotator cleans and separates fine coal from sludge heretofore considered of no commercial value.

It recovers coal without settling; yet the equipment occupies only a fraction of the space required by a thickener large enough to effect similar recovery by gravity. Froth is killed instantly and delivered in cake form.

Water is clarified and pollution of streams and rivers is minimized—important today in view of increasing government regulations on this point.

For more complete details on this new Roberts and Schaefer equipment, for competent counsel on your individual coal cleaning operations, get in touch with R and S engineers. They can help you determine your potential profit—and can show you how you can get it.

Your plant—modernized by R and S engineers—will better meet highly competitive conditions, will take profitable advantage of particular uses and demands for coal in the days to come.

R AND S COMPANY

ROBERTS and SCHAEFER CO.

130 North Wells Street, Chicago 6, Ill.

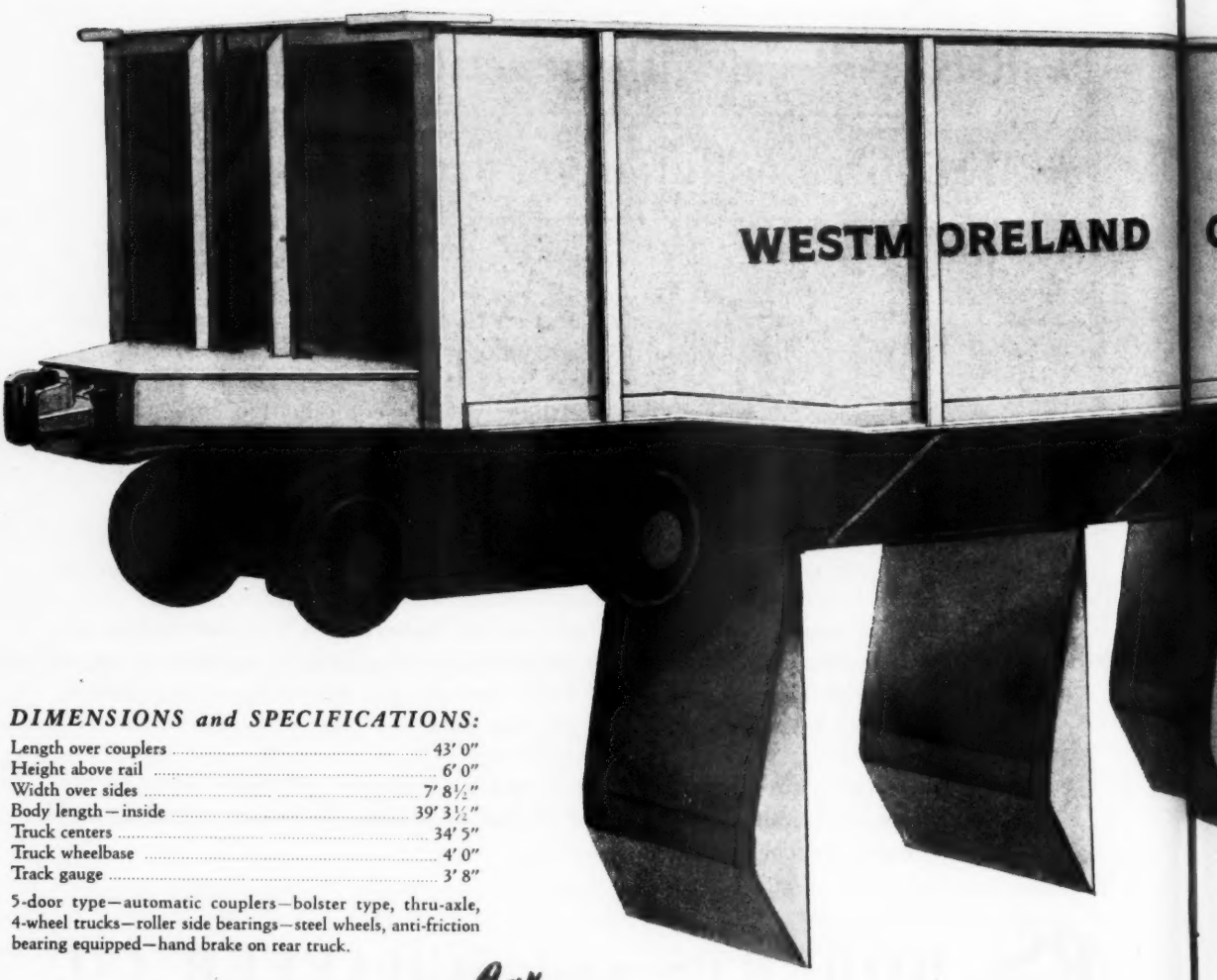
2801 Broadway Ave.
PITTSBURGH 16, PA.

P. O. Box 570
HUNTINGTON 10, W. VA.

FOR THE LAST WORD IN MODERN COAL PREPARATION, VISIT SPACE 1000 AT THE COAL SHOW

. . . see the RandS Froth Flotation Hydrotator in operation . . . as well as the improved RandS Super-Airflow

GIANT New Eight-Wheel Drop-Bottom Mine Car



DIMENSIONS and SPECIFICATIONS:

Length over couplers	43' 0"
Height above rail	6' 0"
Width over sides	7' 8½"
Body length—inside	39' 3½"
Truck centers	34' 5"
Truck wheelbase	4' 0"
Track gauge	3' 8"

5-door type—automatic couplers—bolster type, thru-axle, 4-wheel trucks—roller side bearings—steel wheels, anti-friction bearing equipped—hand brake on rear truck.

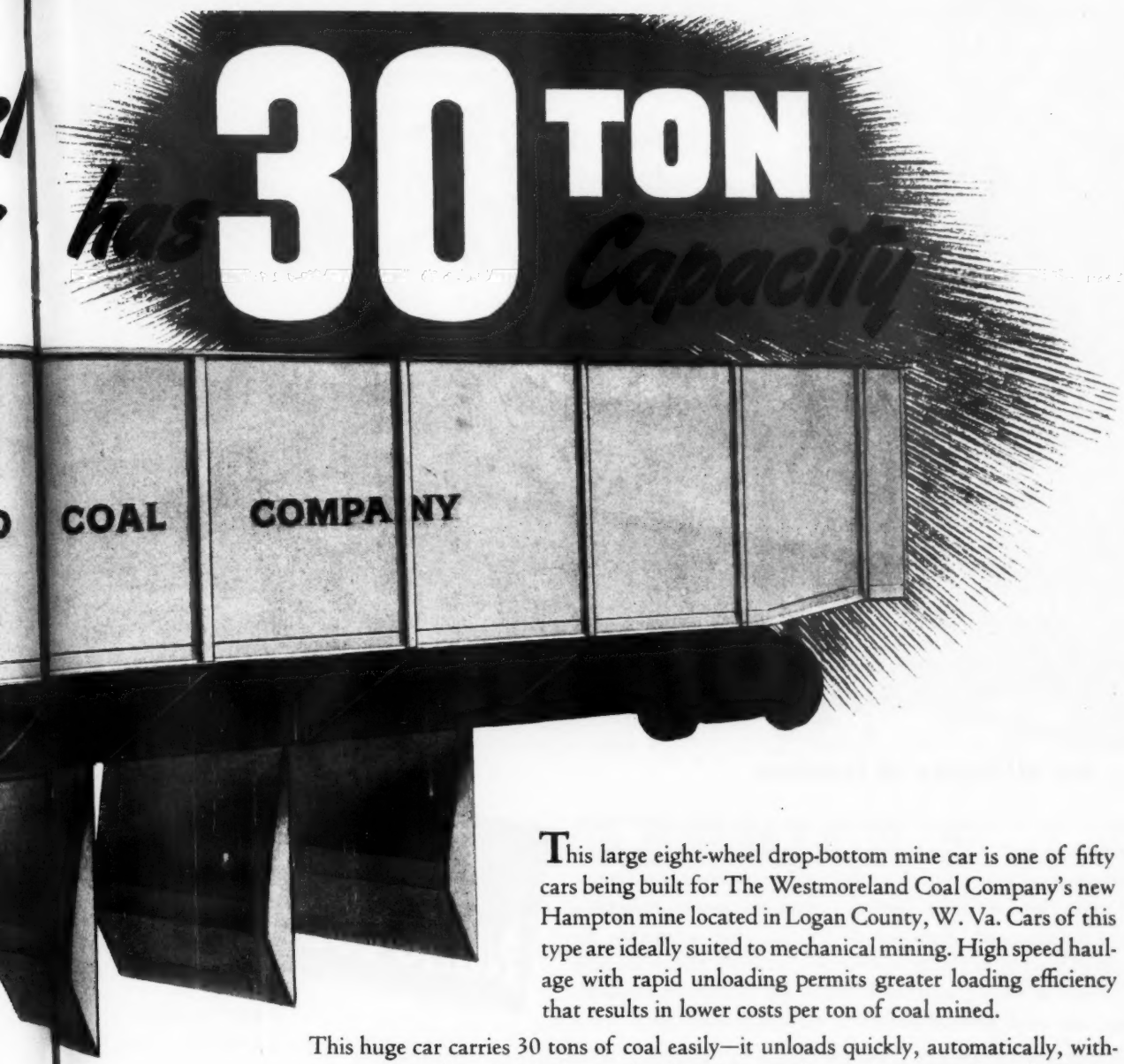
Don't Fail to see This Huge Car

AT THE

CLEVELAND COAL CONVENTION AND EXPOSITION...May 9th to 12th

BOOTH Nos. 519-523

a.C.f.



This large eight-wheel drop-bottom mine car is one of fifty cars being built for The Westmoreland Coal Company's new Hampton mine located in Logan County, W. Va. Cars of this type are ideally suited to mechanical mining. High speed haulage with rapid unloading permits greater loading efficiency that results in lower costs per ton of coal mined.

This huge car carries 30 tons of coal easily—it unloads quickly, automatically, without stopping the trip. Precious unloading time saved permits increased production.

Our sales representatives will be happy to explain the many important features of this new gigantic 8-wheel drop-bottom mine car. Cars of this type may be the answer to your transportation problems. American Car & Foundry Company, New York Chicago · Cleveland · Washington · Huntington, W. Va. · St. Louis · Berwick, Pa. Pittsburgh · Philadelphia · San Francisco

MINE CARS

for Greater Mining Efficiency

Members of Standard Oil Technical and Lubrication Engineering staffs will be in attendance at the Coal Show to describe outstanding developments in mine-equipment lubrication, two of which are outlined here. Stop in at Booth Number 1208 and have them fully explained by mine-lubrication men.

Standard Oil Co. (Ind.), 910 South Michigan Ave., Chicago 80, Ill.

. . . for all types of loaders

HERE is a line of 6 cutter and loader lubricants, all of which have been thoroughly tested in mine operation under severest conditions. These lubricants are offered now as solutions to the frequently troublesome and costly problems encountered in keeping mechanized equipment out of the shop and on the job. In addition, they can lighten the operator's work by making machines easier to handle. Higher machine production at lower maintenance cost is the result with improved loader lubrication afforded by Superla Mine Lubricants.

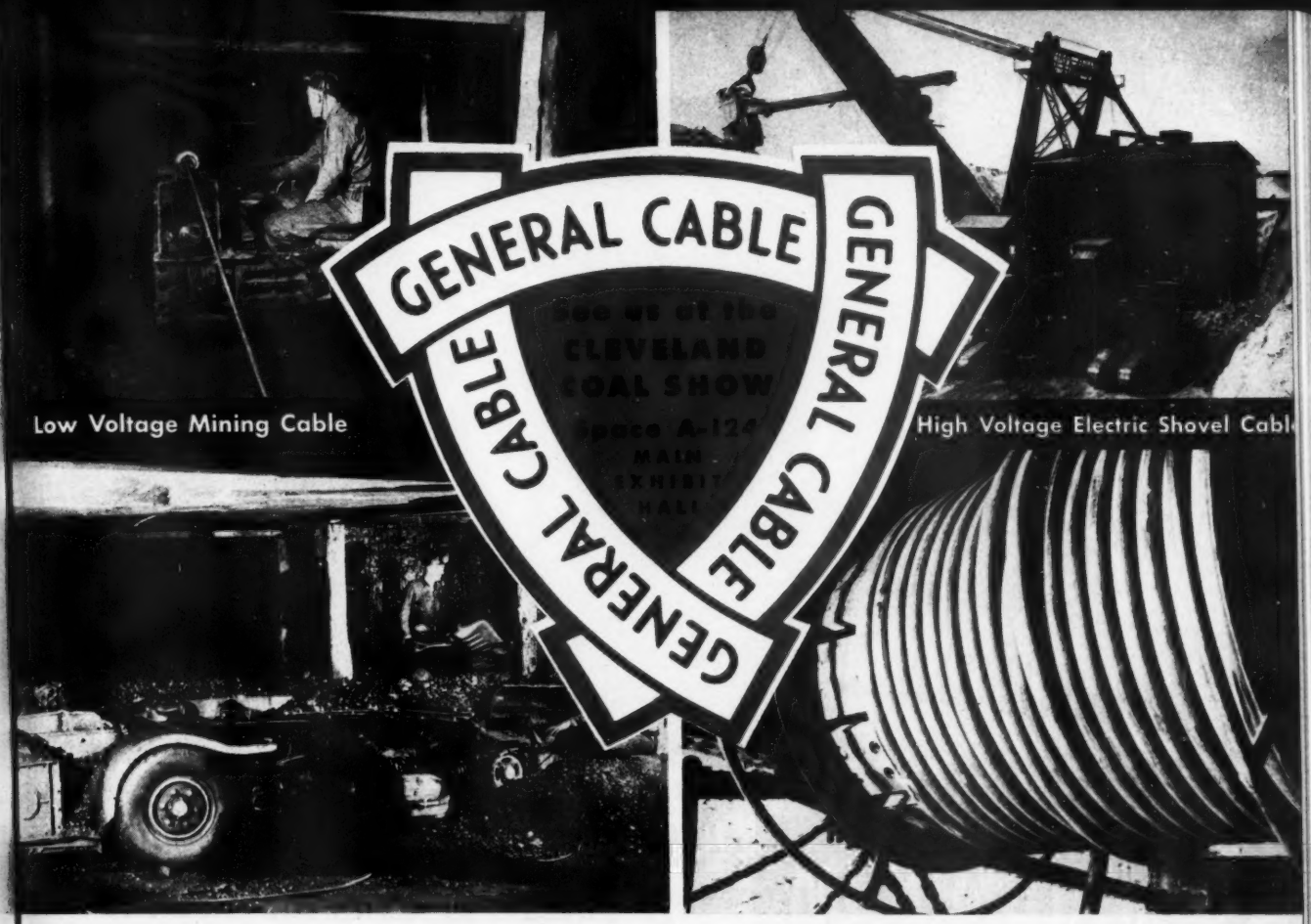
Superla Mine Lubricants

Heavy Duty Cam and Gear Lubricant

. . . for cams on walking draglines

Specially developed to withstand high pressures, Standard's Heavy Duty Cam and Gear lubricant is unexcelled for cam lubrication on walking draglines. You can now solve this troublesome walker-maintenance problem. The lubricant is also packed for ease in handling. See this new lubricant and have it explained to you at Booth Number 1208.

STANDARD OIL COMPANY (INDIANA) STANDARD



SUPER SERVICE S

FLAME RESISTANT...
Commonwealth of Pennsylvania approval registry P-110.

LONG LIFE...
through rugged construction and reinforced, tough jacket compound.

ABUSE RESISTANT...
it "can't kink"—"withstands impact" and has high-rated "tensile strength".

A well known name—backed everywhere by a reputation for quality and long service life!...Super Service S Mining Cables, of all types, are sheathed with a tough, reinforced, flame-resistant, neoprene jacket. Fully flexible, they have a super-rugged resistance to hard usage!...FLAME RESISTANCE is certified by "P-110" approval in raised letters moulded onto the jacket....Whether for low or high voltage power, specify Super Service S Mining Cable for sound overall economy.

GENERAL CABLE
CORPORATION

SALES OFFICES IN PRINCIPAL CITIES

"More Power to You"

Are these facts Cutting Your Costs—or Someone Else's?

The day has come when your jacks and other mining equipment will be measured against a new kind — made of Alcoa Aluminum. They will be strong, light, lasting, and easy to handle.

When you use equipment made of Alcoa Aluminum, you know that it is backed by sixty years' knowledge of alloys, of fabricating methods, of thousands of test results.

If you have an idea for new equipment in aluminum, Alcoa stands ready to help you with sixty years of experience. Write for "Alcoa Aluminum and Its Alloys", or call the Alcoa sales office nearest you. ALUMINUM COMPANY OF AMERICA, 1478 Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA FIRST IN ALUMINUM

ALCOA ALUMINUM

INGOT • SHEET & PLATE • SHAPES, ROLLED & EXTRUDED • WIRE • ROD • BAR • TUBING • PIPE • SAND, DIE & PERMANENT MOLD CASTINGS • FORGINGS • IMPACT EXTRUSIONS
ELECTRICAL CONDUCTORS • SCREW MACHINE PRODUCTS • FABRICATED PRODUCTS • FASTENERS • FOIL • ALUMINUM PIGMENTS • MAGNESIUM PRODUCTS

You are invited to see

EUCLID COAL HAULERS

and other Hauling Equipment

for Overburden and Gob

at the Coal Exposition May 9-12

You'll want to see the 40-ton Bottom-Dump Euclid Coal Hauler and Rear-Dump models for overburden and gob hauling on display at the Coal Show. And while you are in Cleveland we hope that you'll give us an opportunity to show you the modern new factory where Euclid equipment is built. Just drop in at our exhibit and we'll arrange a plant trip at your convenience.

We are looking forward to seeing you in Cleveland and hope you'll put Euclid Headquarters on your "must" list for the Coal Exposition.

The EUCLID ROAD MACHINERY Co.
CLEVELAND 17, OHIO

EUCLIDS *Move the Earth*

TODAY'S MOST POPULAR PERMISSIBLE

Helps you get out better big lump coal

"Monobel" AA—developed by Du Pont Explosives research—quickly made an enviable name for itself. Sales records prove that it has become today's most preferred permissible. That's because it is a reliable producer of profitable, big lump coal.

The slow heaving action of "Monobel" AA puts lump coal where mechanical loaders can get at it easily. It's a water-resistant permissible that does an efficient job of blasting even where extremely wet conditions are encountered. Ideal for high, hard-shooting seams, rock or slate work. Shears ribs and face remarkably clean. Fumes are excellent.

Try "Monobel" AA. Chances are you'll agree that it's an able helper for getting out more big lump coal of the best possible quality. Any Du Pont Explosives representative will gladly tell you about this popular permissible.

E. I. DU PONT DE NEMOURS & CO. (INC.)
EXPLOSIVES DEPARTMENT
WILMINGTON 98, DELAWARE

DU PONT PERMISSIBLES

BLASTING SUPPLIES AND ACCESSORIES

Other Widely Used Du Pont Permissibles

• • •

"LUMP COAL" C

Well-known for its heaving action, this permissible pushes the coal well away from the face to give good loadability. A runner-up in popularity.

• • •

"GELOBEL" C

Here's a high velocity gelatinous permissible with excellent water-resistance—a great favorite in many wet mines. Does a marvelous job in rock and slate and is especially recommended if water is a serious problem.

• • •

DU PONT "NITRAMON"* . . . ideal for stripping operations

because it is the safest blasting agent. "Nitramon" cannot be detonated with blasting caps, rifle bullets, friction or by the impact of falling objects. Yet . . . it is readily fired with "Nitramon" Primer . . . Non-headache producing . . . packed in watertight metal cans so it may safely be loaded far in advance of firing time. If you're on a stripping job, ask the Du Pont man for complete information about "Nitramon."

Be sure to visit the Du Pon Exhibit (Booths A-325, A-331, A-333, A-335) at the 1949 Coal Show in Cleveland May 9-12

Listen to "Cavalcade of America"—Monday evenings—NBC

*Reg. Trade-Mark for nitrocarbonitrate blasting agent.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

Cummins-Powered

24 Earth Movers

295,000 Yards

a month

A fleet of 24 Cummins-Powered Euclid Rear Dumps moves an average of 295,000 *yards* of overburden *a month* on Dick Construction Company's stripping job at Locust Gap, Pa.

The schedule calls for a one and one-half mile round trip every 12 minutes . . . 10 to 15-yard loads on an 8 to 10 per cent adverse grade extending to the dump . . . 84 hours on the job every week.

Cummins Diesels make any piece of mining equipment a "money maker." Write for Bulletin 5263 today.

*Records show yearly fuel costs for a Cummins-Powered earth mover to be as much as $1,138.80 less than fuel costs for another make of diesel doing similar work.

The Cummins Diesel in this Euclid Rear Dump is one of [illegible] Cummins Diesels powering equipment [illegible] the Dick Construction Company and A. E. Dick Contracting [illegible] stripping jobs.

CUMMINS DIESEL

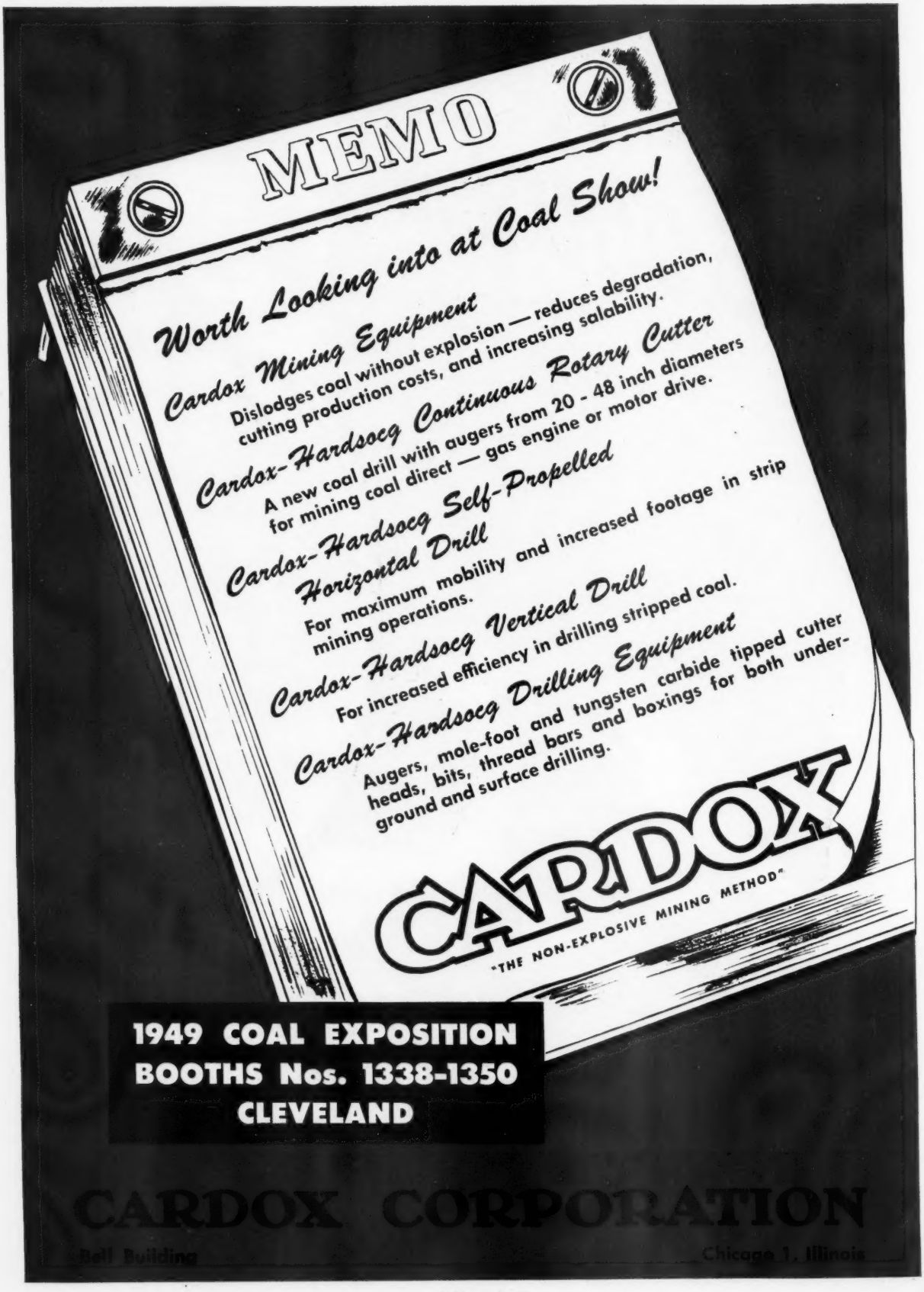
SINCE 1919...PIONEER OF PROFITABLE POWER THROUGH HIGH SPEED DIESELS

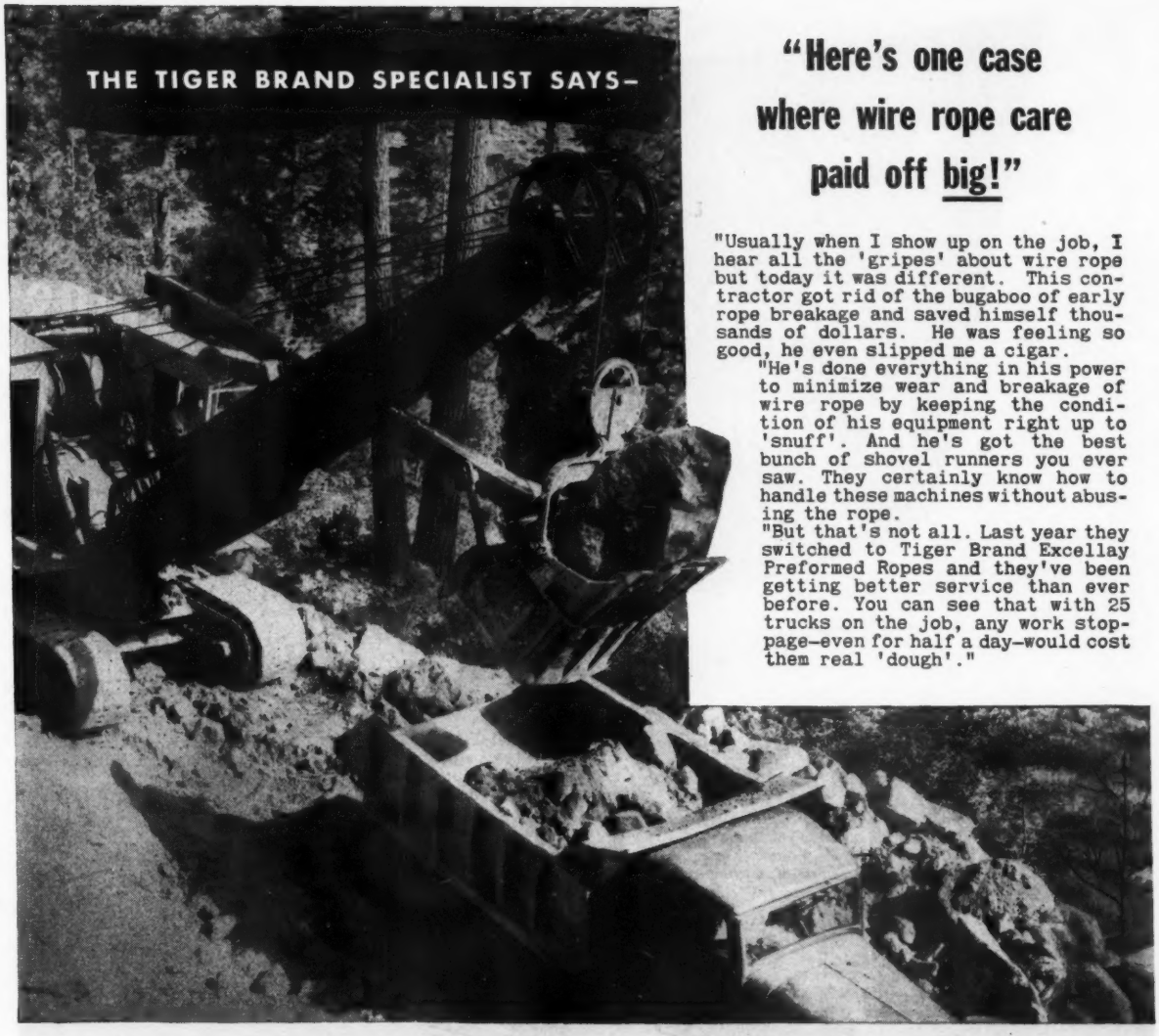
Cummins Diesels Make Money for You

HERE'S WHY . . .

- Fast work cycles
- Big fuel savings
- Low maintenance
- Minimum down-time
- Long engine life
- Warranty—100,000 miles or one year
- 'Round-the-clock service

CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA


MEMO
Worth Looking into at Coal Show!
Cardox Mining Equipment
Dislodges coal without explosion — reduces degradation, cutting production costs, and increasing salability.
Cardox-Hardsocg Continuous Rotary Cutter
A new coal drill with augers from 20 - 48 inch diameters for mining coal direct — gas engine or motor drive.
Cardox-Hardsocg Self-Propelled Horizontal Drill
For maximum mobility and increased footage in strip mining operations.
Cardox-Hardsocg Vertical Drill
For increased efficiency in drilling stripped coal.
Cardox-Hardsocg Drilling Equipment
Augers, mole-foot and tungsten carbide tipped cutter heads, bits, thread bars and boxings for both under-ground and surface drilling.
CARDOX
"THE NON-EXPLOSIVE MINING METHOD"
1949 COAL EXPOSITION
BOOTHS Nos. 1338-1350
CLEVELAND
CARDOX CORPORATION
Bell Building
Chicago 1, Illinois



"Here's one case where wire rope care paid off big!"

"Usually when I show up on the job, I hear all the 'gripes' about wire rope but today it was different. This contractor got rid of the bugaboo of early rope breakage and saved himself thousands of dollars. He was feeling so good, he even slipped me a cigar.

"He's done everything in his power to minimize wear and breakage of wire rope by keeping the condition of his equipment right up to 'snuff'. And he's got the best bunch of shovel runners you ever saw. They certainly know how to handle these machines without abusing the rope.

"But that's not all. Last year they switched to Tiger Brand Excellay Preformed Ropes and they've been getting better service than ever before. You can see that with 25 trucks on the job, any work stoppage–even for half a day–would cost them real 'dough'."

How proper wire rope application saves you money

There is always one best type of wire rope for every application and the TIGER BRAND Wire Rope Specialist can help you select the right ropes for your particular needs. He'll check your equipment, keep you posted on proper rope care, and a dozen other things to assure long service life at low unit cost.

To help you maintain these operating standards, we have prepared a booklet entitled, "Valuable Facts about the use and care of Wire Rope." Every key man on your operating staff should be supplied with this much needed information. Send the handy coupon for your copy.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

SEND FOR NEW FREE BOOKLET

American Steel & Wire Company
Rockefeller Building, Dept. N-4
Cleveland 13, Ohio

Gentlemen:

Please send me a copy of your booklet, "Valuable Facts about the use and care of Wire Rope."

Name.....

Company.....

Position.....

Address.....

City..... State.....

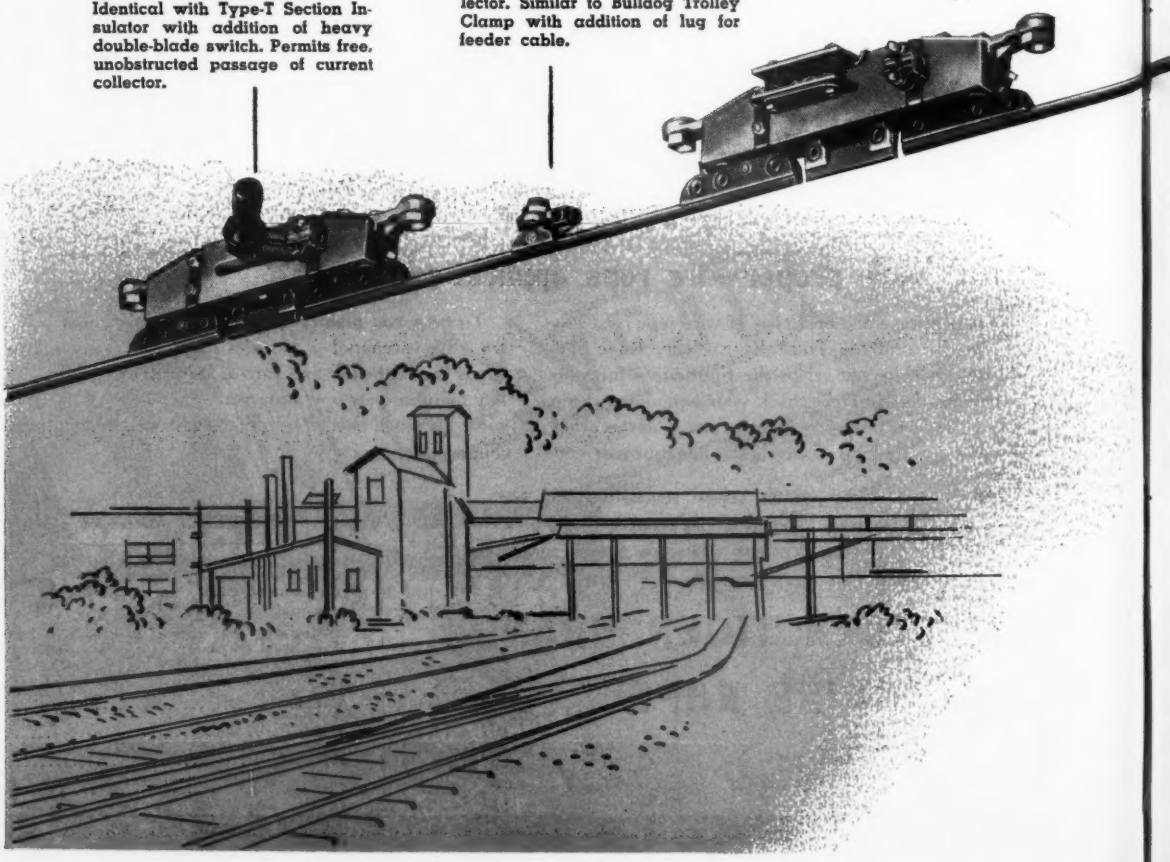
UNITED STATES STEEL

Now... for the first time... you can prevent ALL bumps in your Trolley Overhead System

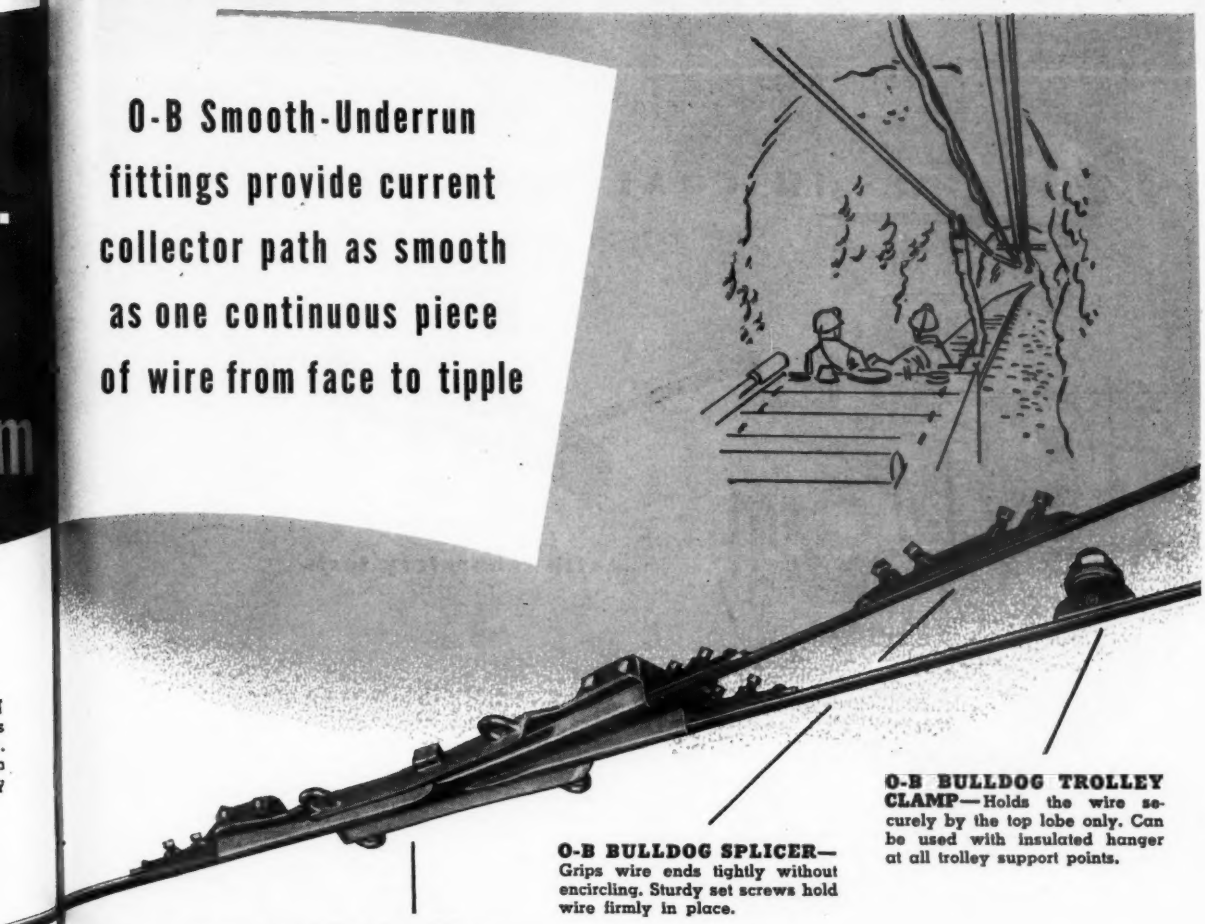
O-B TYPE-T SECTION INSULATOR SWITCH*— Identical with Type-T Section Insulator with addition of heavy double-blade switch. Permits free, unobstructed passage of current collector.

O-B BULLDOG FEEDER CLAMP— Leaves bottom part of trolley wire as free, unobstructed running surface for current collector. Similar to Bulldog Trolley Clamp with addition of lug for feeder cable.

O-B TYPE-T SECTION INSULATOR*— End runners grip wire by top lobe only. Center runner is adjustable to same underrun level as trolley wire.



O-B Smooth-Underrun fittings provide current collector path as smooth as one continuous piece of wire from face to tipple



O-B BULLDOG TROLLEY CLAMP—Holds the wire securely by the top lobe only. Can be used with insulated hanger at all trolley support points.

O-B BULLDOG SPLICER—Grips wire ends tightly without encircling. Sturdy set screws hold wire firmly in place.

O-B TYPE-M TROLLEY FROG*—Designed with runners having a cross section—similar in size and shape to that of trolley wire. Anchor tips hold the wire firmly against the runner, producing a smooth, level running surface for the current collector.

*A new Smooth-Underrun Fitting developed especially by O-B to give your current collectors a smooth, unobstructed running surface. Write for details and specifications.

Have you ever wished you could install just one continuous piece of trolley wire in your mine? Bumps caused by wire encircling fittings in the overhead system are headaches to the haulage operator. They are a constant source of arcing and wire burning, lessening the life of both current collectors and trolley wire. Dewirements are more frequent.

While it is hardly possible to install wire in one continuous piece, you can obtain the same effect by building with fittings selected from O-B's complete line of Smooth-Underrun Materials. Instead of encircling the wire, O-B Fittings grip grooved, Figure 8 and No. 9 Section wire by the top lobe only, leaving the bottom part free and unobstructed. Your current collector is assured of a smooth, level transition from wire to frog or cross-over runner by means of separable anchor tips.

Because of these features, your locomotives can operate safely at higher speeds; wire wear will be lessened; fewer dewirements will occur. For your next trolley overhead system, insist on O-B Smooth-Underrun Fittings. They'll make your wire seem like one continuous piece from face to tipple.

Ohio Brass

MANSFIELD, OHIO

CANADIAN OHIO BRASS CO., LTD., NIAGARA FALLS, ONT.

3008-M

A New Era IN COAL PREPARATION

match laboratory tests

The rapid growth of mechanical mining, especially where it involves the extraction of the entire seam, has increased the need for mechanized preparation of coal produced for various markets.

The average seam of coal contains ash and sulphur impurities which are usually concentrated in bands or strata immediately adjacent to the portions of the seam containing the better quality coal.

Ash and sulphur impurities are often found so finely dispersed that they are not apparent to the untrained eye. Material containing such impurities may have a specific gravity very close to that of coal which is of satisfactory quality.

Before the advent of mechanized mining, banded coal in the seam was manually discarded at the working face in the mine as it could not be efficiently separated in the washery.

After the objectionable banded material was discarded at the working face, the coal could be recovered from a mixture of coal and slate or rock due to the wide difference in specific gravity between these materials. Jigs and launders could satisfactorily serve this purpose but could not efficiently separate second quality coal (which the banded material represents) from premium quality coal. With machine mining the full seam is loaded including the banded material which was formerly discarded manually.

Separation of premium coal from second quality coal can only be accomplished at a lower level of specific gravity than has been found possible heretofore with devices employing only currents of water.

In the laboratory heavy liquids are used to indicate the correct specific gravity of the bath for the separation of second quality coal from premium quality coal. The well known laboratory float and sink test is recognized as the most accurate method of separating solids by specific gravity differences. Materials of greater specific gravity will sink and those of less gravity will float.

Coal preparation engineers have long realized the possibilities of such a separation, provided it could be applied economically on a commercial basis. Methods have been discovered and placed into practical use, which will produce the same result on a commercial scale at unit capacities up to 250 tons per hour and at efficiencies upward of 98% with respect to laboratory procedure.

Coal producers can now combine the economies of mechanized mining with maximum recovery of salable coal out of run-of-mine material by the use of the Davis Heavy Media Float and Sink Processor which has been thoroughly tested by equipment installed and being installed at plants of some of the *world's largest producers of coal.

Send for catalog No. 148.

heavy media **hm**

*At the new Jones & Laughlin Steel Corporation 2000 tons hourly capacity coal preparation plant at East Fredericktown, Pennsylvania, our Heavy Media Float Sink Processing equipment is being installed to clean 5" x ¼" coal in combination with free discharge launders and concentrating tables for cleaning the ¼" x 0 coal. All processing equipment engineering for the entire plant was by us in collaboration with the Jones & Laughlin engineering staff for the general contractors, F. H. McGraw & Company of New York and Hartford, Conn.

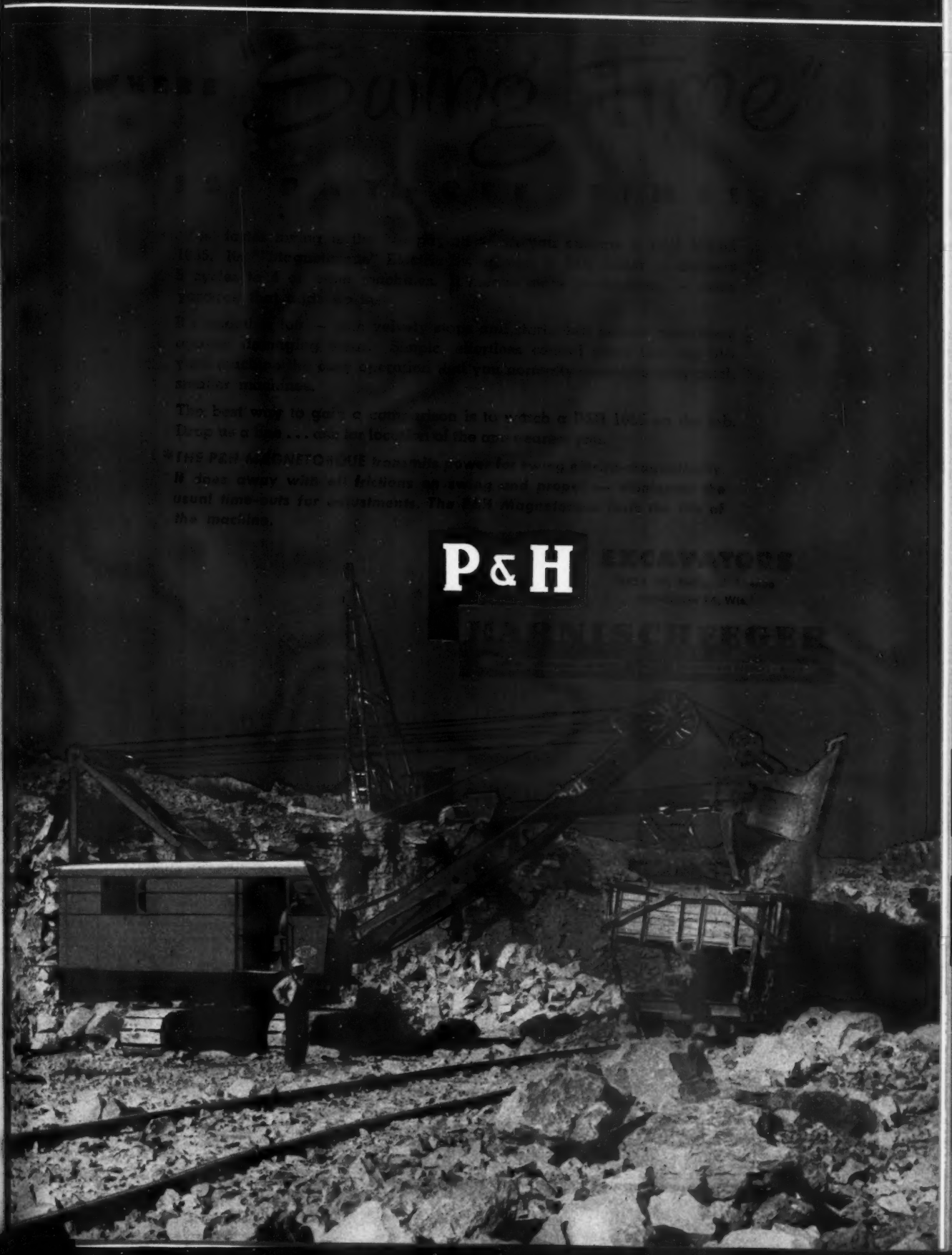
Float and Sink PRECISION PROCESSOR

Nelson L. Davis Company

ENGINEERS AND CONTRACTORS
343 SOUTH DEARBORN STREET *Chicago 4, Ill.*

See our Exhibit American Mining Congress, Cleveland, Ohio, May 9th-12th
Booths 1669—1565—1569

IT'S P&H FOR ADDED VALUES!

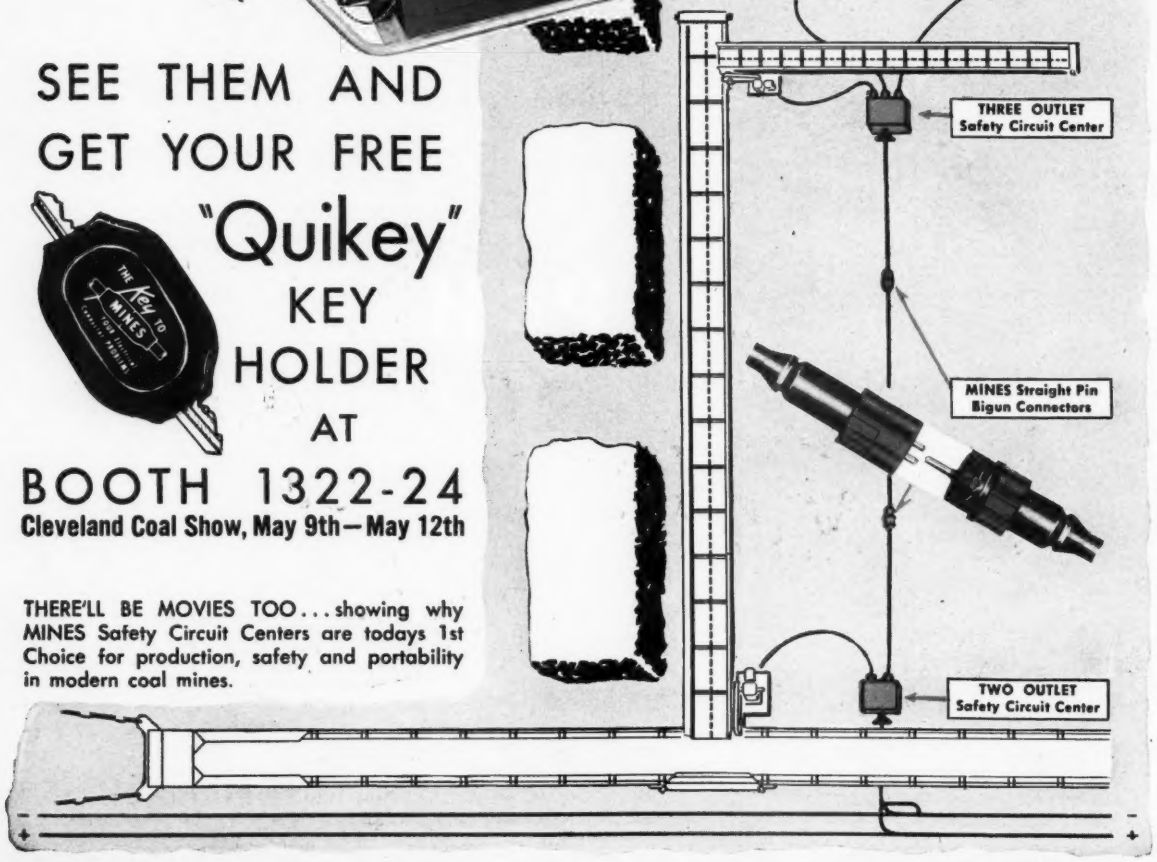


Announcing MINES low height–dust resisting *Safety Circuit Center* POWER DISTRIBUTION SYSTEMS

SEE THEM AND GET YOUR FREE "Quikey" KEY HOLDER AT BOOTH 1322-24

Cleveland Coal Show, May 9th—May 12th

THERE'LL BE MOVIES TOO... showing why MINES Safety Circuit Centers are todays 1st Choice for production, safety and portability in modern coal mines.



SALES AND SERVICE TO THE MINING INDUSTRY EXCLUSIVELY BY

JOY MANUFACTURING COMPANY

HENRY W. OLIVER BUILDING • PITTSBURGH 22, PA.

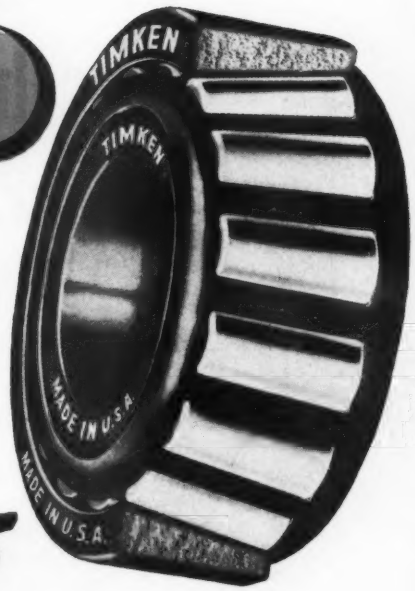
MANUFACTURED BY

MINES EQUIPMENT COMPANY

4233 CLAYTON AVE. — MINES — ST. LOUIS 10, MO.

89%

OF THE EXHIBITORS AT THE COAL SHOW WHO USE BEARINGS IN THE EQUIPMENT THEY MANUFACTURE . . . . . *USE*



TIMKEN®
TAPERED ROLLER BEARINGS

These Timken bearing users include manufacturers of practically every kind of mechanical equipment used in the coal industry — mine cars, mine locomotives, belt conveyors, aerial tramways, mining machines, loading machines, shuttle cars, hoists and tipple equipment.

More Timken bearings are used in mine cars than any other bearings. More than half a million mine cars equipped with Timken tapered roller bearings already have gone into service and the figure constantly is growing.

Because of their tapered design, Timken bearings carry radial, thrust and combined loads. Because of their precision manufacture they provide smooth, power-economizing operation and because they are made of Timken fine alloy steel they stand up and deliver lasting service with characteristically low cost for operation and maintenance.

Make sure you have them in the equipment you buy or build. Look for the trade-mark "TIMKEN" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address "TIMROSCO".

SEE US AT THE COAL SHOW SPACE No. A-400

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

NOT JUST A BALL ◯ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ◫ AND THRUST →◫← LOADS OR ANY COMBINATION →✳←

NEW BELT CONVEYOR

cuts haulage cost 50¢ per ton with 25% lower investment

Saves 6000 feet of Coal Travel

In 1931 operations in a once thriving mine came to a standstill because of high costs.

A few years ago increasing demand for coal brought the management of the mine to the conclusion that it could be opened and operated economically if a new plan for conveying the coal could be put into execution.

A three-way engineering team went into action—operating engineers, consulting and equipment engineers, and conveyor belt engineers from U. S. Rubber.

Their bold plan called for the longest single unit coal slope belt conveyor in the world—2600 feet long, 15 degree incline, 643 foot lift.

Just at this time U. S. Rubber completed development of an amazing new conveyor belt combining super-strong Ustex* and flexible nylon. This timely development made it practical to handle the entire conveying job from underground loading points to the surface with a single Ustex-Nylon belt. This, together with a ¼-mile surface belt conveyor provided a practical short-cut to economy and success.

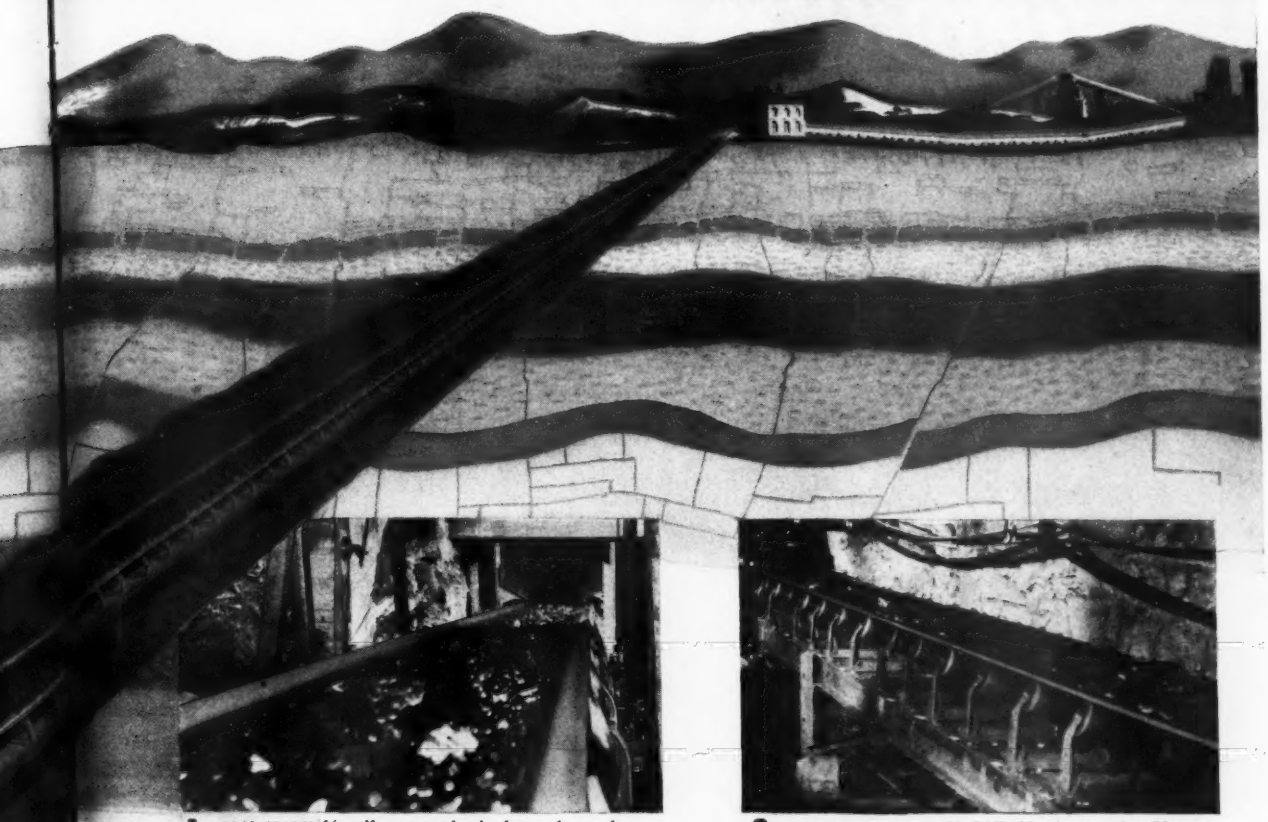
For now the mine is operating. Coal is moving up the slope, across the surface on an efficient belt conveyor system—modern, streamlined, economical—another achievement of Three-Way Engineering.

SUMMARY OF SAVINGS
New Belt Conveyor System

ELIMINATES:	One vertical shaft One underground slope One underground plane Six transportation units (rail, hoist) Topping spillage on rail system
PREVENTS:	Transportation accidents
REDUCES:	Lost man-hours. Insurance rates
INCREASES:	Tons per hour; tons per man
CUTS:	25% from investment 50¢ per ton from haulage costs 6000 feet from coal travel

SYSTEM...

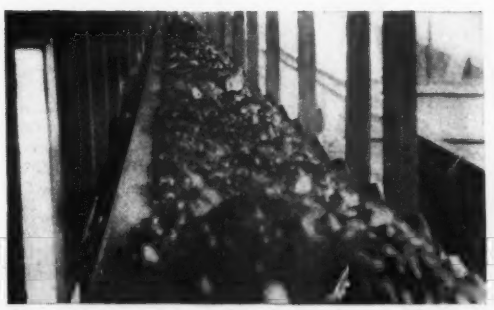
World's Longest Single-Unit Coal Slope Belt Conveyor—Equipped with more than a mile of U.S. Rubber USTEX-NYLON BELT delivers coal in continuous stream to a ¼-mile surface conveyor also equipped with a U.S. Rubber Belt.



1. COAL STARTS ½-mile upward trip from the underground hopper on single unit conveyor equipped with one mile of Ustex-Nylon belt.

2. UP IT RIDES . . . on U. S. Rubber's amazing Ustex-Nylon Belt. Ustex for strength, Nylon for flexibility.

3. TOP OF THE SLOPE, 643 feet higher than the beginning. Coal has traveled 2600 feet on 15° incline, now transfers to ¼-mile overland belt also made by U. S. Rubber.



4. HERE IT IS at the end of the 3900 foot short-cut that saves 6000 feet of travel.

When you have a materials handling problem—underground, slope, or surface, call in a U. S. Rubber engineer. Write Mechanical Goods Division, United States Rubber Company, Rockefeller Center, New York 20, New York.

**Registered trade name of U. S. Rubber*

A DEVELOPMENT OF

U.S.RUBBER
SERVING THROUGH SCIENCE

UNITED STATES
RUBBER COMPANY

Invitation

TO AN EXHIBIT

PACKED WITH ACTION

Mack has assembled an action-packed exhibit that will be of interest to every visitor at the Coal Show.

SEE THE BIG, NEW MACK TRACTOR-TRAILER COAL HAULER!

INSPECT MACK'S HUGE 30-TON SIX-WHEELED CHASSIS!

SEE THE FAMOUS MACK BALCONIED BOGIE IN ACTION!
Biggest four-wheel driven truck bogie in standard production.

SEE THE EXCLUSIVE MACK POWER DIVIDER IN ACTION!
The unique device that assures positive traction over rough terrain and through slippery mud or sand.

SEE THE MACK DUPLEX TRANSMISSION IN ACTION!
Largest transmission ever produced for motor trucks . . . all parts exposed so that its operation may be observed at all speeds.

Mack representatives and engineers will be on hand to greet you. They'll gladly answer any questions you may have. Drop in and see us. We're sure you'll find it interesting and well worth your while.

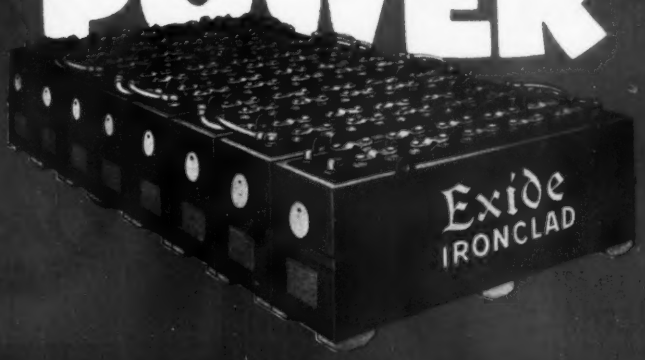
Mack TRUCKS

AT THE . . .

COAL SHOW
(SPACE 500)
CLEVELAND
MAY 9-12th

Mack Trucks, Inc., Empire State Building, New York 1, New York. Factories at Allentown Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Limited.

SAFE DEPENDABLE POWER



EXIDE-IRONCLAD BATTERIES assure full shift availability

EQUIP your battery-powered haulage units with Exide-Ironclad Batteries . . . and keep tonnage moving in maximum volume, at minimum power costs. In mine after mine, in all coal producing areas, these trustworthy batteries are giving daily proof of their ability to keep equipment rolling along in top form, straight through to the end of the shift.

Exide-Ironclad Batteries are DIFFERENT from all others. They have ALL FOUR of the characteristics that a storage battery must have to assure maximum performance from mine locomotives, trammers and shuttle cars—high power ability, high electrical efficiency, ruggedness and a long life with minimum maintenance. The combination of these four Exide-Ironclad characteristics assures years of day-in, day-out service with dependability and economy.

1949 Coal Convention and Exposition, American Mining Congress, Cleveland, Ohio, May 9th to 12th. Visit Exide Booth A341

"Exide-Ironclad" *Reg. Trade-mark U. S. Pat. Off.*

1888 . . . DEPENDABLE BATTERIES FOR 61 YEARS . . . 1949

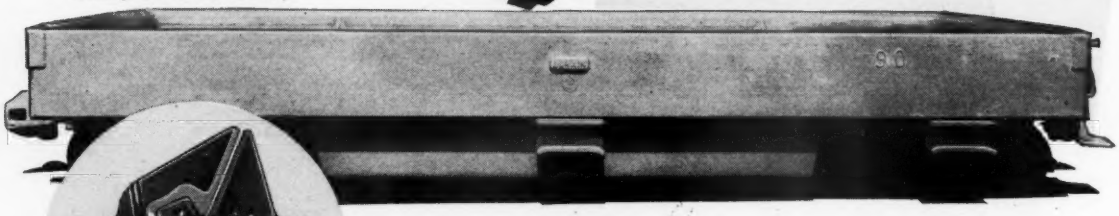
THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • *Exide Batteries of Canada, Limited, Toronto*

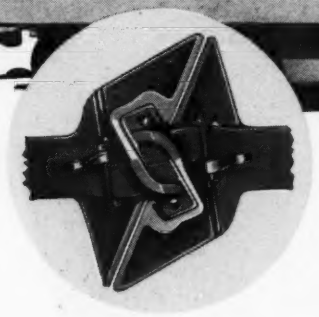
Photograph by courtesy of Southern Car & Mfg. Co.

Photograph by courtesy of Watt Car & Wheel Co.

Photograph by courtesy of Carnegie-Illinois Steel Corp.

FOR *Small Cars* OR *Big Ones*





...WILLISON *automatic* COUPLERS!

Size of car makes no difference in the working advantages of Willison Automatic Couplers. For large cars or small ones; they give you maximum safety, faster handling and lower maintenance cost.

Safety—Willison Automatic Couplers can be operated entirely from the side of the car, eliminating necessity of worker going between cars.

Speed—Completely automatic operation speeds up coupling—greatly facilitates gathering and shunting. Willison Couplers are always ready to couple, operating just as readily when cars are reversed in position.

Long Life—Stresses of draft and buffing are received directly by coupler body without interposition of any moving part. Two essential parts, the head and the lock, do the work. Sturdy construction results in greatly reduced coupler and car maintenance.

These advantages of Willison Automatic Couplers have been proved for over twenty years by leading mine operators. We are ready to work with you or your car-builders in the selection of Willison Automatic Couplers for your mine or industrial cars.

See Willison Automatic Couplers at Booth 634, during 1949 Coal Convention and Exposition, Cleveland, Ohio.

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

Cleveland, Ohio

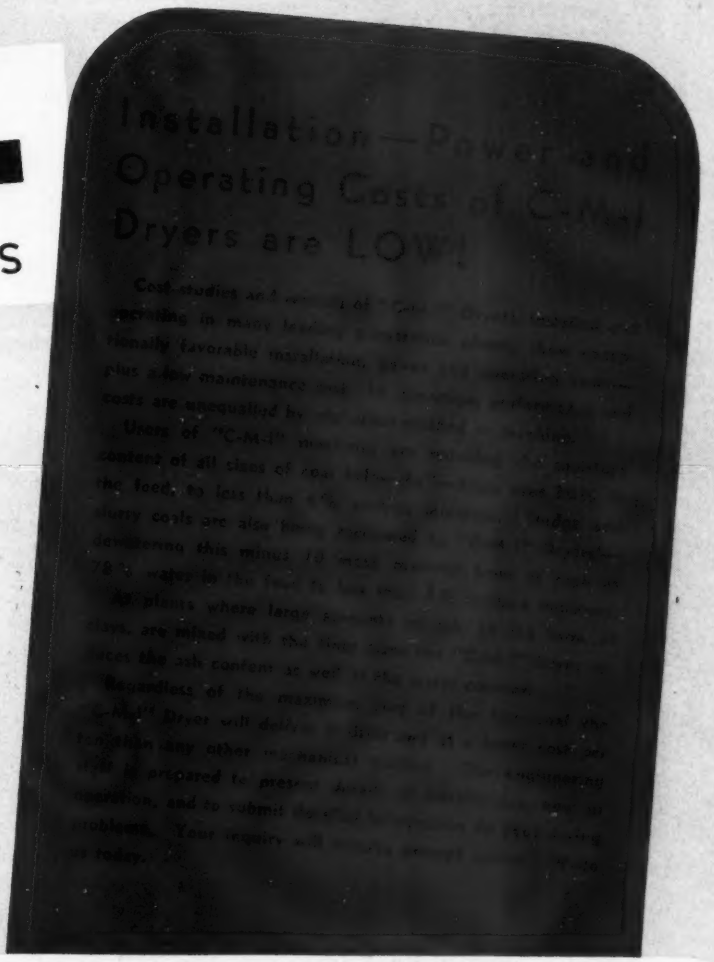
NATIONAL *Products* FOR TRANSPORTATION AND INDUSTRY

M&S Co. Est. 1868

C-
CONTINUOUS

M-
CENTRIFUGAL

I-
DRYERS

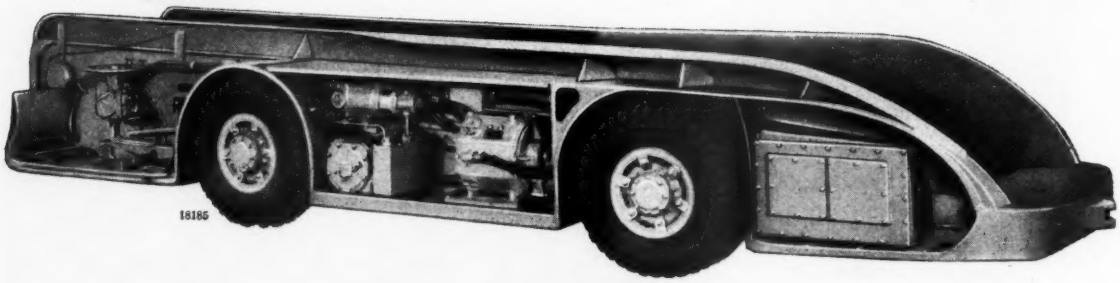


PROVED
IN LEADING
PREPARATION PLANTS

CENTRIFUGAL and MECHANICAL INDUSTRIES, Inc.
3600 S. SECOND STREET ST. LOUIS 18, MO.

See us Working

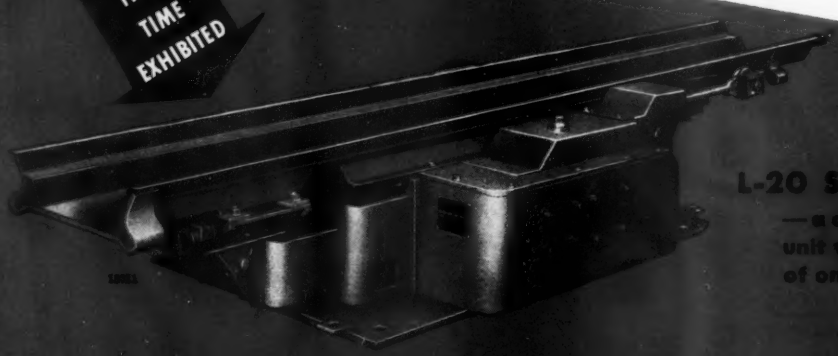
FIRST TIME EXHIBITED



274 SHUTTLE CAR

—cable reel operation; two wheel drive; four wheel steering; four wheel brakes.

FIRST TIME EXHIBITED



L-20 SHAKER DRIVE

—a one piece, high capacity unit with an over-all height of only 25".

Also to be on display for your inspection: the famous 512 Shortwall with Bugduster; the 712 Shortwall for topcutting; the 460 Track Mounted Loader; the 99-5 heavy duty, coal mine belt conveyor; a Type 91 slo-speed gathering locomotive.

at the Coal Show!

The welcome mat is out at the Goodman exhibit. Be sure to stop in and see the NEW GOODMAN MACHINES in operation.

FIRST TIME EXHIBITED

660 TRACTOR TREAD LOADER
—low height; swinging front and rear conveyors; rated capacity 10 tons per minute in free loading coal.

FIRST TIME EXHIBITED

812 SHORTWALL
—low height; hydraulic control; built-in bugdustor.

GOODMAN MANUFACTURING COMPANY

HALSTED STREET AT 48th • CHICAGO 9, ILLINOIS

CUTTING MACHINES • LOADERS • CONVEYORS • LOCOMOTIVES

Parisi's Check

For Coal Cutting Efficiency

Mr. Dario Parisi, Superintendent of the Allegheny River Mining Company, uses Kennametal U-7 Heavy Duty Bits exclusively for cutting the tough Kittanning seam near Kittanning, Pa. His written reasons at the right are based on his 31 years experience with this mine.

Mr. Parisi states: "When using conventional bits, a change of bits from one to three times per cut was necessary; Kennametal Bits are changed every three working shifts. In many instances, they could be used another 24 hours without being sharpened. Also, we now have one bit sharpener instead of four—effecting a saving of $39.05 per day."

This typical example of Kennametal bit performance—saving 40 to 120 bit changes per day—saving 75% on bit sharpening cost—saving an appreciable amount of money on bit cost—are reasons why more mine operators use Kennametal Mining Machine Bits to reduce cutting costs and increase coal production.

Booklet M-5 gives complete particulars. We'll be glad to send you a copy.

- ✓ Longer Bit Life
- ✓ Less Dust
- ✓ Less Bit Changing
- ✓ Faster Cutting
- ✓ Lower Bit Cost
- ✓ Cutters More Satisfied

KENNAMETAL Inc.

LATROBE, PA., U. S. A.®

THE WORLD'S LARGEST MANUFACTURER OF CEMENTED CARBIDE MINING TOOLS

COAL-HEAVER WANTED
Husky, reliable worker for hard job in open-pit mine. Must be able to put in long hours without time-wasting delays. High efficiency, low operating costs important. Steady job for right party.
Box 100-B
BUCYRUS ERIE
100-B

This Applicant GETS THE JOB!

Because it has the strength, capacity and durability for sustained high production, this Bucyrus-Erie 100-B shovel with 7-yd. coal-loading dipper turns in outstanding performance records in helping to meet the steadily increasing demands for coal from open-pit mines. It's fast, because there's no useless deadweight to swing . . . because precise Ward-Leonard electrical control gives the operator the quick, smooth response he needs to make every minute of every shift count. It stays on the job because it's strongly built of long-wearing steels and alloys, and designed from top to bottom for long years of profitable service in the toughest jobs, with low operating and maintenance costs. Like all Bucyrus-Eries, the 100-B represents nearly 70 years of continued leadership and progress in the construction of quality machines for the excavating industry.

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

61L49

Interested in a

LOW CAPITAL-COST WAY TO INCREASE CLEANING CAPACITY WITH BETTER OVER-ALL GRADE AND RECOVERY?

Read How You Can Quickly Supplement Present Preparation Facilities With Heavy-Media Separation To Achieve Any Or All Of These Advantages:

BETTER QUALITY COAL:

The addition of a small Heavy-Media Separation unit to your present cleaning plant can raise the quality of your total coal output. You can then operate your present cleaning equipment at its most efficient setting to produce "specification grade" coal without regard to clean coal losses. Send the near gravity fraction or the refuse to Heavy-Media Separation for precision cleaning. With this combination, you can attain the over-all cleaning efficiency of a complete Heavy-Media Separation plant.

REDUCED BANK LOSS:

Marketable coal now going to refuse can be recovered by a supplementary Heavy-Media Separation unit because Heavy-Media most closely duplicates heavy-liquid results, makes a practically perfect separation over a wide size and gravity range.

INCREASED CAPACITY:

If you are now making and recirculating a middling, you can send that product directly to Heavy-Media Separation and feed at least an equivalent amount of extra tonnage of raw coal in at the head of the plant. By using this method, one operation increased raw feed capacity by 22%.

LOW CAPITAL COST:

A small investment in Heavy-Media Separation equipment—a fraction of the cost of a new cleaning plant—will provide the over-all cleaning efficiency of a new Heavy-Media Separation plant treating your entire feed.

NO LOSS OF OPERATING TIME:

An auxiliary Heavy-Media Separation unit can be installed in or adjacent to your present cleaner without interrupting current production.

QUICKLY INSTALLED:

Prefabricated plants with capacities up to 125 tons per hour (enough to modernize a good-sized washer) are available for prompt delivery. Larger Heavy-Media units can be quickly designed and installed thru the accumulated experience of well-known engineering firms.

NET, by supplementing your existing preparation plant with a Heavy-Media Separation Unit you can meet today's *and tomorrow's* market specifications . . . increase cleaning capacity . . . ship a higher percentage of the coal you mine . . . wind up with a worthwhile return on a relatively small capital investment. And as a bonus, get insurance against becoming a marginal producer!

Of course, the arithmetic will vary for every mine. But the fundamental soundness of this approach to better quality, tonnage and profits is evidenced by the calibre of the operators now using or building supplementary Heavy-Media Separation units in existing plants.

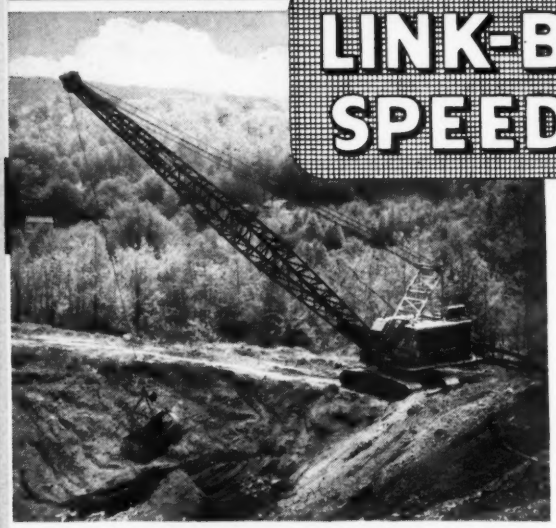
We invite exploratory discussion and are prepared to help you (or engineering firms of your choice) with pilot plant tests of your coal in the Cyanamid Mineral Dressing Laboratory, assistance on plant design and the services of Cyanamid Field Engineers to tune up your Heavy-Media Separation unit.

AMERICAN Cyanamid COMPANY

MINERAL DRESSING DIVISION

30 ROCKEFELLER PLAZA NEW YORK 20, NEW YORK

LINK-BELT SPEEDER



Shovel-Cranes

MAKE COAL STRIPPING FAST-EASY-PROFITABLE

In every strip-mining area, you'll see Link-Belt Speeder Shovel-Cranes stripping overburden and loading out coal and doing these jobs to the great satisfaction of owner and operator alike.

Advanced engineering governs the design and construction of these machines, providing extra strength, scientific distribution of weight and free access to all points requiring any attention. Their abundance of power is under easy control, assuring top production without operator fatigue. Speed-O-Matic hydraulic control gives effortless handling of the largest load.

Easy handling, trouble-free operation and long life add up to profits, when Link-Belt Speeder Shovel-Cranes are on the job. Special high-lift shovels and long-boom draglines meet every stripping situation. Link-Belt Speeder distributors are stocked with parts and staffed with competent service men to keep your Link-Belt Speeder in tip-top operating condition.

VISIT THE LINK-BELT SPEEDER BOOTH, No. 1625

LOWER LAKESIDE HALL

AT THE COAL SHOW — CLEVELAND — MAY 9 TO 12th

LINK-BELT SPEEDER

LINK-BELT SPEEDER CORPORATION,
CEDAR RAPIDS, IOWA

Builders of the Most Complete Line of
SHOVELS-CRANES-DRAGLINES

Mining Congress Journal

Published for the Entire Mining Industry
by the American Mining Congress
SHELDON P. WIMPFEN, Editor

APRIL
VOLUME 35 1949 NUMBER 4

Education Brings Safety

LEGAL prohibitions penalizing jaywalkers are in force in many cities yet thousands are killed or injured annually—often a direct result of their personal folly. Building regulations call for the installation of electrical equipment according to rigid specifications, but fires of electrical origin continue to take a great toll of life and property because of individual failure to observe precautions. Coal-producing states have laws to compel the observation of adequate safeguards in mines but accidents do occur and will continue to occur that may be traced to the statement "I didn't think. . . ."

Recognition of the fact that hazards may develop in a matter of minutes stresses the great importance of constant vigilance on the part of every underground worker. Constant training in safety and adequate supervision of working places are the foundation upon which to base efforts to reduce still further the record low 1948 rate of 1.56 fatalities per million tons of coal mined. Education together with good housekeeping, adequate ventilation, and rockdusting are over-all measures that bring results.

Now, with the proposed objective of improving safety, Congressional Committees are considering several bills that would place police powers in the hands of Federal Inspectors. Actually, machinery already exists for closing mines deemed dangerous. The power to withdraw miners from unsafe mines rests not only in the hands of State mine inspectors but is, according to contractual agreement between coal mine operators and the United Mine Workers, a right enforceable by Union Mine Safety Committees.

To invade the police powers of the States by extending this authority to Federal inspectors is fraught with many difficulties. It is highly questionable whether mine safety would be increased and there is a strong likelihood that the effectiveness of Bureau of Mines research and education programs aimed at bettering safety would be impaired. Confusion would be created by thus triplicating the closure power and the laudable cooperation now existing between operators and the Bureau of Mines would be imperiled.

To make safe any mines found operating without adequate supervision, or effective safety programs, presents a challenge to the operators, the State inspectors, and the Union Mine Safety Committees. As a cardinal principle, all operators should adhere to good practice, approved by qualified State inspectors of long term selection, who should be free from political and economic pressures. With the cooperation of the UMW, which has ample educational facilities to give added emphasis and sincere support to the vigorous safety program of operators, State agencies, and the Bureau of Mines, accidents can be still further reduced by pressing forward with the fundamental and proven precept of education for safety.

A Fair Return

SUCCESSIVE Coal Shows, with their all-inclusive displays of machinery, equipment, and supplies for every phase of coal production, focus increased attention upon the vast strides that have been made in producing coal with greater safety, ease, and economy. Today coal heats half the nation's homes, powers 68½ percent of its railroads, and 66 percent of its manufacturing plants. Likewise coal is basic to the production of steel, nonferrous metals, 54 percent of all electric power, and a host of chemical products. These coal-based activities are the very foundations of the expanding economic structure supporting 148,000,000 free Americans.

Opening a coal mine and placing it in operation is a slow and costly process. Large sums of money are required for the purchase and installation of plant and equipment. Current costs, taxes, depreciation allowances, funds to set aside for new mines, and a margin of profit must come from coal sales. Earnings must be sufficient to encourage investments. James D. Francis, president, Island Creek Coal Co., in speaking before the Twenty-seventh Fuel Engineering Conference in Detroit, pointed out that 1946 earnings were 8.47c per ton, the highest up to that time for two decades. He emphasized the fact that return on the approximately three billion dollar investment in the industry averaged one percent over the seven so-called "profitable" years, 1940-46.

Obviously such meager returns are little attraction to new investors, whose funds, in addition to the large sums being expended by many coal companies, are needed to equip and develop new mines. The public—and the mine workers—should recognize that adequate earnings must be realized if the capital required to supply the coal essential to our economy is to be forthcoming.

Suspension bridge seen from above mine portal

World's Largest Preparation Plant Nears Completion

By GEORGE P. FULTON
Project Engineer
F. H. McGraw & Co.

A large preparation plant designed to treat coal from full-seam mining is now being built for Jones & Laughlin Steel Corp. The unique construction features of the plant are of vital importance to the planning of future coal washing installations.

THE WORLD'S largest Heavy Media preparation plant is now being built at LaBelle, Pa., for Jones & Laughlin Steel Corp. by the F. H. McGraw & Co., who are performing all field installation work including excavations, foundations, concrete structures, erection of structural steel, buildings, and machinery and equipment, associated with the Nelson L. Davis Co., consulting and designing engineers on all processing machinery and general design of the plant. Construction of the project of which F. H. McGraw's part is in excess of $12,000,000 is predicated upon the existence of extensive reserves of coal in the mines of the Vesta Shannopin Coal Division of Jones & Laughlin Steel Corp.

A variety of different construction units make up the complete project. Trip hikers, rotary dumps, apron conveyors, crushers, slope, portal, and a 40-in. borehole to carry power underground are included in the installation on the mine side of the river. A 720-ft covered suspension bridge will carry run-of-mine coal across the Monogahela river to the bins from which it will flow through the several structures that comprise the washing plant.

Currently, production comes from a number of mines, all working the Pittsburgh seam, and the products are treated in several temporary washing plants. The need for greater quantities and better grades of metallurgical coal to produce more and better grade steel were basic reasons for the decision to build a washing plant to treat a maximum mine output of 2400 tons per hour. Full-seam mining, with complete mechanization, will be practiced upon the completion of the huge washing plant designed to produce three primary products—metal-

lurgical coal, steam coal, and refuse. When the Vesta No. 4 and No. 5 Mines are consolidated into the largest underground coal mine in the world, the combined production will be treated in the new preparation plant to produce metallurgical fuel of "uniform analysis," steam coal, and rejects.

Extensive tests were conducted by the Nelson L. Davis Co. in a pilot plant set up in Chicago to determine the most satisfactory method of preparation to produce the desired grade of coking coal and separate the steam coal that makes up a part of the Pittsburgh seam. (The Nelson L. Davis Co. holds patent rights involved in the Heavy Media preparation equipment.) Flow sheet design took into consideration the large area covered by the mine and the coal analysis variations in the different sections.

It was apparent that frequent dividing and remixing of the flow of coal would be necessary. At three stages of the process—the raw coal feed, the primary separation, and the final product—a large capacity surge bin will be installed to serve as a blending bin for layer loading of the coal so that even distribution can be accomplished to produce the uniform analysis required for metallurgical use.

Flow Sheet Outline

In general, the proposed flow sheet calls for screening of the run-of-mine coal to produce plus and minus ¼-in. sizes for treatment by separate processes and rejoining in the final product. The plus ¼-in. will be cleaned by Heavy Media in two steps. A primary separation will be made at 1.55 sp gr with its float passing through a secondary separation at 1.35 sp gr. This float goes as a prepared metallurgical coal to the final blending bin from which the river barges are loaded. The 1.35 sp gr sink, which has already passed as 1.55 sp gr float, will be recovered as steam coal. The ¼-in by 0 from the primary raw coal screens will be treated by a launder plant and passed through centrifugal dryers to the final metallurgical blending bins. Careful and continual checks are provided throughout the process; the coal will be weighed at each stage by belt weightometers and samples taken by automatic samplers. A closed circuit for the water includes the necessary settling tanks, thickeners, filters, and clarifiers.

Jones & Laughlin Steel Corp. prepared a preliminary flow sheet and tentative specifications to enable the several contractors to prepare and submit bids on buildings and equipment. Of the various bidders F. H. McGraw & Nelson L. Davis Co. were awarded the contract in July 1947, to design and build the plants.

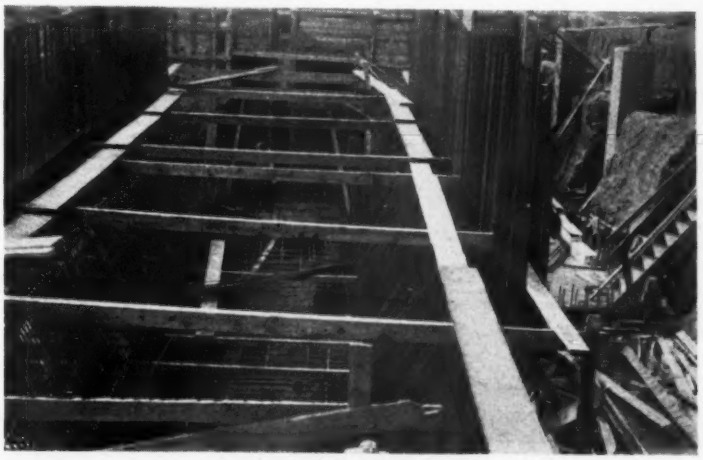
Immediately after the contract was let the engineering crews visited the site in order to locate the harbor, rail, and road lines. Design and layout engineering work proceeded simultaneously to establish all working points and general designs so that field construction could be commenced in August.

From Mines Through Primary Screens

Plans call for trip hikers and dumping facilities to handle 2400 tons per hour. Mine cars will be dumped underground on the level of the main haulageway by rotary dumps discharging into a bin equipped with a heavy duty apron conveyor which feeds the coal out and over a block magnet onto an 8-in. bar screen. Large lumps will pass into a 48-in. by 60-in. two-roll primary crusher each roll driven by a 150-hp motor and the crushed lump joins the through product of the bar screens to make a minus 8-in raw coal product for the cleaning plant. A 60-in. belt conveyor takes the coal from under the crusher, out of the drift portal, across the river on a suspension bridge and delivers it to the preparation plant at the main raw coal feed.

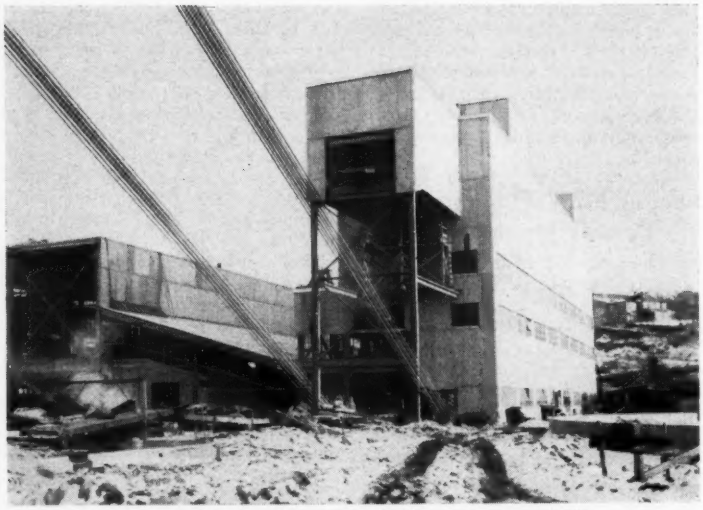
Raw coal feed passes over a scalping screen where 8 by 5-in. pieces are reduced by a secondary crusher to minus 5-in. at peak rate of 400 tons per hour. The minus 5-in. crushed product, together with the through product of the scalping screens, passes on a belt conveyor to a 500-ton raw coal surge and blending bin. A weightometer on the belt accurately measures the tonnage delivered. Eight main compartments make up the blending bin. Each bin has a double hopper bottom and gate to provide 16 discharge points. Here the separation process starts.

A vibrating feeder under each gate delivers coal to a battery of 16 double-deck vibrating screens which separate the coal into 5 by ¼-in. and ¼-in. by 0. Provision is also made to bypass the secondary crusher which enables treatment of 8 by ¼-in. raw coal



Forming tank for drag classifier

Excavation for main building pump room



South anchorage of suspension bridge and raw coal bin

Huge thickeners take shape

by the Heavy Media plant and ¼-in. by 0 raw coal by the fine coal launder plant. The ¼-in. by 0 raw coal is delivered by belt conveyor to a 1900-ton blending bin, and the 5 by ¼-in. product goes to a battery of eight prewetting screens, each 6 by 16 ft in size. The minus ¼-in. from the prewetting screen is taken to a drag tank and through a dewatering drag conveyor to join with the minus ¼-in. by 0 from the primary vibrating screens and thence to the ¼-in. by 0 raw coal blending bin.

Heavy Media Separation

In the Heavy Media systems the first step is delivery of the 5 by ¼-in. raw coal to eight prewetting screens. Here the coal is prewetted by means of spill boxes located over the screens to assure uniform moisture content and thus avoid dilution of the separating medium in the processors. The 5 by ¼-in prewetted raw coal is discharged from the ends of these screens into eight Heavy Media processors where a separation of clean coal from rejects is made at 1.55 sp gr.

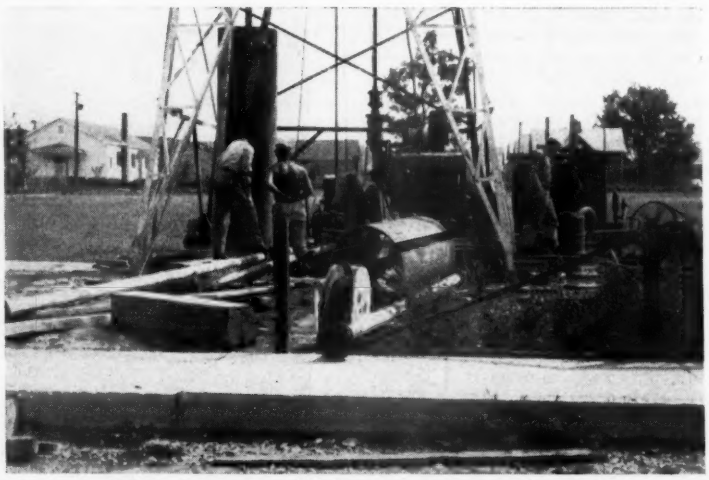
A series of 36-in. wide belt conveyors transfers the rejects from the cleaning plant to two concrete silo refuse bins and thence to waste piles via trucks. Provision is made to substitute belt conveyors or tramways in place of these trucks in the future.

A system of 48-in. wide belt conveyors carries the 1.55 sp gr. 5 by ¼-in. cleaned float coal to the concrete 18-compartment primary blending bins. This coal is fed from the bottom of each compartment by vibrating feeders to six 30-in.-wide belt conveyors which in turn deliver to six prewetting screens where the secondary separation begins. Here the 5 by ¼-in., 1.55 sp gr float coal is delivered to secondary Heavy Media processors when a fourth separation is made of metallurgical coal and steam coal at 1.35 sp gr. The metallurgical 1.35 float coal is transferred on 54-in. wide belts to metallurgical blending and storage bins for railroad or barge loading.

The 1.35 sp gr 5 by ¼-in. steam coal from the secondary processors is passed over a 1-in. mesh scalping screen where the 1 by ¼-in. through product is directed to the steam coal blending bin for railroad or barge loading. The 5 by 1-in. steam coal is crushed and recirculated through the processing system. At each loading point automatic samplers are provided.

Launder Process

From the fine raw coal blending bin the ¼-in. by 0 is fed by nine vibrating feeders to a 42-in. belt conveyor and delivered to the free discharge laun-



Driving 40-in. calyx drill hole to supply power underground

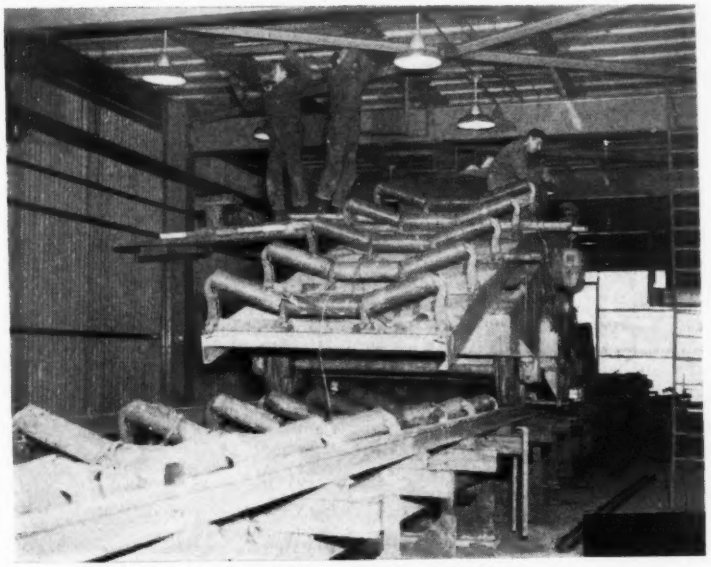
ders. From the launders the clean coal goes to rotary dewatering wheels and is then distributed to 18 Carpenter driers. The dried coal is mixed with the 5 by ¼-in., 1.35 sp gr float coal and taken to the metallurgical washed coal blending bin as a final product.

From the launders, the ¼-in. by 0 middlings pass over a ⅛-in. mesh vibrating screen. The ¼ by ⅛-in. middlings, after dewatering by drag conveyor, is recirculated to the launders. The minus ⅛-in by 0 middlings pass over a dewatering flight conveyor to twelve Deister concentrating tables. The clean middlings go to a sump where the settlings are pumped to join the clean coal from the launders, then to the dewatering wheels and the Carpenter driers.

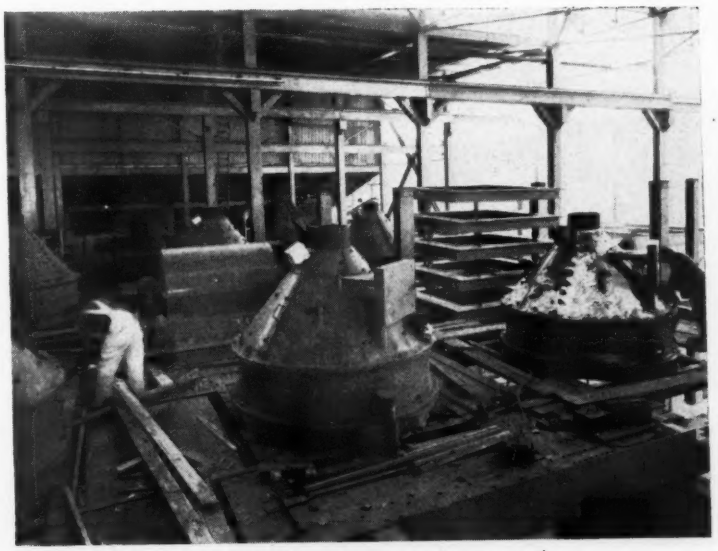
Construction Begun

Although the process itself gives no indication of the construction problem involved, the huge quantities of coal to be handled calls for an unusual amount of equipment. This fact necessitated the utilization of the services of experienced engineers and contractors capable of handling all the many details of design, engineering and procurement in the construction of this modern plant.

A site was selected on the south bank of the Monongahela river almost opposite the existing tipple of Jones & Laughlin Steel Corp.'s Vesta No. 5 mine. There, on the bend of the river, over an area of several acres of grassland and swamp, was to arise a preparation plant of unprecedented size. McGraw's first step in this vast project was the construction of a dock made from timber obtained from clearing the site. Thus most of the materials for the construction of the plant could be handled by transport on river barges. The first major unit of the plant scheduled for construction was the blending bin and 712 Raymond piles were driven to refusal (40 to 50 ft) and later filled with concrete. This was essential as the entire building was constructed in marshy area.



Putting finishing touches on belt tripper



Equipment installation proceeds despite weather

Blending Bins

To construct the 227 by 68-ft blending bin, slip form concreting methods were employed to carry the structure to a height of 68 ft. An additional 37 ft of the superstructure roof brought the total height of the building to 105 ft. The bin consists of 168 cells with a combination of four cells to a single outlet chute. Hopper bottom of the cells are set at different angles according to the angle of repose of the contained material.

The vast quantities of electrical equipment and supplies utilized in the construction of the project offers some idea of the problem encountered. More than 80 miles of conduit were used, weighing 440 tons. Cable in sizes from 600,000 cir mils down to No. 12 copper wire adds up to 323 miles containing 60 tons of copper. Total installed horsepower is approximately 12,000 and there are about 454 motors in the plant which range in capacity from ½-300 hp. Most motors are explosion-proof, completely interlocked with sequence starting and stopping so that if a conveyor belt in the preparation plant is stopped, all motors behind it are stopped simultaneously back to the raw coal surge bin feeders. This interlocking system links nearly all of the equipment in the plant in order that material overflows be eliminated.

Unique Suspension Bridge

In order to carry run-of-mine coal from the mine portal on the north to the preparation plant on the south bank of the Monongahela river, a suspension bridge, now completed, was designed to carry the 60-in. conveyor belt. The 720-ft span of the bridge will be the longest covered conveyor suspension bridge in the world. From approach to approach the structure will be 900 ft in length. A 20-ft wide continuous Quonset hut will cover the belt and provide a walkway for servicing—it will be heated.

Project Complications

In addition to the regular construction codes which were required to be followed, Federal, and State mining laws, regulations of the U. S. Army Engineers, Coast Guard, State Department of Waterways, and Civil Aeronautic Authorities had to be adhered to. Cooperation from state, local, county and municipal administrations facilitated work on the detour from Highway 88 made necessary by construction of the north anchorage of the suspension bridge and the mine portal.

Labor Relations

Nine different crafts are represented among the men working on the project. Most of these craftsmen come from Pittsburgh. Wages vary from $1.35 per hour for labor to $2.70 per hour for bricklayers. Six 8-hour days are worked per week. In general, labor relations on the project have been good. Disputes were held to a minimum, due to the fact that F. H. McGraw & Co. was able to maintain its traditional record of fair practice in dealing with the crafts. The only difficulties were limited to various jurisdictional disputes none of which were serious in hampering construction.

Plant Construction Units

For convenience in scheduling design, engineering, construction, and procurement, the records of all of the construction units—main building, blending bin, raw coal bin, dumping station mine, primary substation mine, substation, refuse bin, suspension bridge, 85-ft thickener, 150-ft thickener, river tipple, track tipple, boiler house, river pump house, locker building, secondary crusher station, fire tower, pump house, settling pool, conveyor galleries—have all been kept separate. A chart is maintained on each unit showing the progress made in various phases of the operation listing all of the preparation units connected with each facility.

A great variety of different types of machinery and supplies will be installed in the plant. A total of 20,000 ft of conveyor belting will be required. The longest conveyor is 1932 ft from head pulley to tail pulley or a total length of approximately 3870 ft. There are 77 different conveyors in the plant which range from 24 to 60 in. in width. A total of 18 different types of belt conveyor idlers, 3340 in all, will be employed.

Forty-five pumps will be employed in the plant. The capacities range from 90 to 3300 gpm. A wide range of fluids of different density will be handled, especially by the pumps used in direct connection with the Heavy Media separation process.

More than 700 different items which came from many of the 48 states from Massachusetts to California have gone into building the project. All material is ordered through the project engineers' office where a strict account is kept of all items including their location and proper installation. At one time, in the stage of greatest activity, approximately 80 men were employed on design and engineering in McGraw's Pittsburgh office in addition to over 40 men on the Nelson L. Davis Co. and Macdonald Engineering Co. staffs located in Chicago.

CABLE (Electrical)

	Miles
Control	179
Lighting	45
Power	85
Welding	2
Telephone	12
Total miles containing 60 tons of copper	323

CONDUIT

(80 miles of conduit weighing 440 tons)

Idlers—Total 890 (18 types) weighing 210 tons.

Pulleys—Total 260 (8 types) weighing 260 tons.

Pillow blocks—Total 490 weighing 16 tons.

COAL PROCESS MACHINERY

(Not including conveyors)

	Tons
Main building	650
Raw coal building	120
Secondary crusher building	40
Blending building	90
Mine	380
Thickeners	20
River tipple	30
Total tons	1330

Roof slab—64,000 sq ft

Siding—195,000 sq ft

Total floor area—184,500 sq ft

Coal process piping—5½ miles

Reinforcing steel—230 miles weighing 792 tons

Excavation—63,540 cu yd

Concrete—23,900 cu yd

Wooden forms—411,700 sq ft

Samplers—30 for sampling in various buildings

Structural steel (buildings)—3200 tons

SUSPENSION BRIDGE

Steel—853 tons

Cable—114 tons

Concrete:

(1) Anchorages—3500 cu yd

(2) Piers—1578 cu yd

CONVEYORS—HOPPERS—CHUTES

Steel—2000 tons

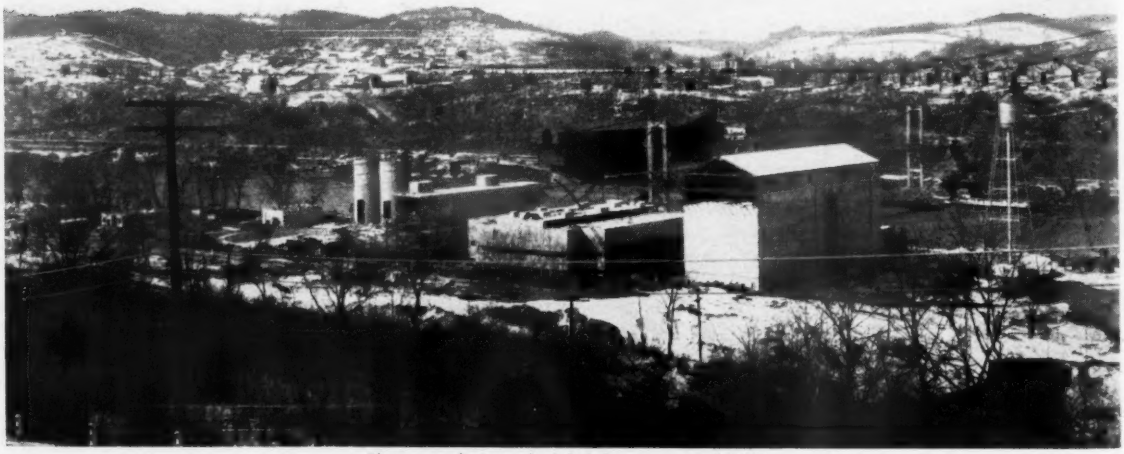
Underground drainage, water lines, and fire line—2 miles

Railroad—1 mile

Roads—5800 sq yd

Yard grading—11,500 sq yd

Fence—3800 ft



Plant completion scheduled for summer of 1949

1949

Coal

CONVENTION and EXPOSITION

PUBLIC AUDITORIUM—

CLEVELAND • MAY 9-12, 1949

AMERICAN MINING CONGRESS

AMC

★ ★ ★

L. EBERSOLE GAINES
President
The New River Company
National Chairman, Program Committee

Program Committee

R. L. ADAMS
Old Ben Coal Corp.

E. F. ARMINGTON
Euclid Road Machinery Co.

C. V. BECK
Clarence V. Beck & Co., Inc.

H. V. BROWN
Brown-Fayro Co.

E. J. BURNELL
Link-Belt Co.

T. C. CHEASLEY
Sinclair Coal Co.

H. J. CONNOLLY
Pennsylvania Coal Co.

W. H. COOKE
Little Sister Coal Corp.

JOHN P. COURTRIGHT
Marion Power Shovel Co.

S. J. CRAIGHEAD
U. S. Fuel Co.

J. H. FULFORD
Jeffrey Mfg. Co.

WM. E. GOODMAN
Goodman Mfg. Co.

J. L. HAMILTON
Northern Coal Mines
Republic Steel Corp.

GEORGE C. HOLTON
Explosives Department
American Cyanamid Co.

DAVID INGLE, JR.
Ingle Coal Co.

E. H. JENKS
Hanna Coal Co.

A. S. KNOIZEN
Joy Mfg. Co.

FRANK F. KOLBE
United Electric Coal Cos.

STEPHEN KRICKOVIC
Eastern Gas & Fuel Associates

S. S. LANIER, JR.
Norton Coal Mining Co.

HARRY LaVIERS
South-east Coal Co.

CHARLES E. LAWALL
C. & O. Railway

CARL LEE
Peabody Coal Co.

H. B. LEE
Maumee Collieries Co.

R. C. LUTHER
Peerless Coal & Coke Co.

T. F. McCARTHY
Clearfield Bituminous Coal Corp.

D. L. McELROY
Pittsburgh Consolidation Coal Co.

H. W. MEADOR
Stonega Coke & Coal Co.

C. R. NAILLER
Pursglove Coal Mining Co.

J. T. RYAN, JR.
Mine Safety Appliances Co.

LEONARD SARGEANT
Fairmont Machinery Co.

FRED O. SEE
Mining Division Cardox Corp.

F. G. SMITH
Sunday Creek Coal Co.

R. H. SWALLOW
Ayrshire Collieries Corp.

H. H. TAYLOR
Franklin County Coal Corp.

L. N. THOMAS
Carbon Fuel Co.

W. A. WIRENE
Industrial Material Division
General Electric Co.

T. R. WORKMAN
West Virginia Coal and Coke Corp.

Highlighting
COAL'S PRODUCTION PROGRESS

S. M. CASSIDY
President
Consolidation Coal Co. (Ky.)
Chairman, Coal Division

Modern Practices and Methods of Coal Mining, Preparation, and Utilization Will Be the Theme of the 1949 Coal Show at Cleveland

COAL MINING men have rung up a notable score in making the nation's most important basic fuel available in ample supply in the past year. The Coal Convention and Exposition of the American Mining Congress will commemorate the industry's achievements at the Public Auditorium May 9-12. Four unusually full days will be devoted to an analysis of current problems and an outline of future trends.

This year the usual morning registration crowds will be reduced by a new streamlined method of advance registration. Under this plan notices were sent to the key officials of coal companies, suggesting that they send in lists of their men who will attend the Coal Show. Each of these men has been furnished with his "Coal Show Credentials," which upon presentation at the main entrance will admit him without delay. Many individuals not covered by these lists have likewise registered and received their "credentials" in advance. Through this procedure, intended to minimize the need for standing in line and speed up the registration process, more time will be available for the inspection and study of exhibits and for other Convention activities.

Inclusive Program Scheduled

An exceptionally comprehensive program of Convention sessions has been arranged by a hard-working committee under the leadership of L. Ebersole Gaines, president, New River Co. Top-flight experts in their specific phases of coal mining, preparation, utilization and marketing have worked long and hard to bring convention-goers the results of the best thinking in the industry.

On Monday afternoon, May 9, the Convention Program opens with concurrent sessions on trackless mining and on maintenance and ventilation. A symposium on continuous mining is a feature of special interest in the trackless mining session, while auxiliary ventilation and maintenance of both underground and preparation plant equipment are key attractions of the other session.

Tuesday morning's program will cover utili-

zation and marketing with a strong accent on future fuel reserves, trends and demands, and depreciation allowances in relation to new capital outlays. During Tuesday afternoon, meetings on face operations and strip mining will run concurrently. Cutting and drilling, breaking down the coal, and the care and use of trailing cables will be discussed by experts of long experience. Overburden drilling and blasting and various deep stripping methods will be presented at the strip mining session.

Surface preparation will be the subject of the Wednesday morning meeting. Recent advancements in dense media separation processes and some specific practices in dewatering and drying coal will be covered.

J. W. Woomer
J. W. Woomer & Associates
Chairman, Floor Committee

At sessions taking place on Wednesday afternoon, underground haulage and strip mining topics will be analyzed in detail. Means of locomotive dispatch by telephone and radio and the latest development in belt haulage, in addition to a comparison of shafts versus slopes for hoisting, will be discussed. At the strip mining session, practices in the anthracite field, contour mapping, and open-pit power distribution will be the subjects of papers by noted authorities. A report on the progress made in reclaiming strip areas for future beneficial uses will be offered. Also on Wednesday afternoon, a round-table discussion on steep pitch mining describing operations in the anthracite field, Alabama, the far West, and Canada will be of particular interest to those who face the numerous problems involved in producing coal from steeply dipping beds.

On Thursday morning a session will treat with management and related problems. Experts with a complete knowledge of these basic questions will consider the joint responsibility of management and the miner for mine safety,

Session Chairmen

Charles B. Baton
Geo. S. Baton & Co.

L. C. Campbell
Coal Division
Eastern Gas & Fuel Associates

S. J. Craighead
U. S. Fuel Co.

Photos not available:

David Ingle, Jr.
Ingle Coal Co.

H. H. Otto
Hudson Coal Co.

E. F. Stevens
Pyramid Coal Corp.

A. R. Matthews
Clinchfield Coal Corp.

C. R. Nailler
Pursglove Coal Mining Co.

K. A. Spencer
Pittsburg & Midway Coal Mining Co.

H. H. Taylor
Franklin County Coal Corp.

the problem of attracting young men to the coal mining industry, and questions of management-employe relations. Thursday afternoon has been left open in order that convention visitors may inspect and study the extensive array of exhibits.

Comprehensive Equipment Display

The 1949 Coal Show offers all mining men—not only from the coal fields but from metal and nonmetallic mining operations—a golden opportunity to see the latest developments in all kinds of mining machinery, equipment and supplies. Under the chairmanship of J. H. Fulford, vice-president, Jeffrey Manufacturing Co., manufacturers of every type of equipment applicable to deep and strip mining, loading, haulage, cleaning, and preparation have cooperated to show the industry an all-inclusive display.

More than 220 of the leading mining equipment manufacturing companies will be represented. Included in the exhibit are such items as cutting machines, drills, pumps, gears, Diesel engines, loaders, conveyors, continuous mining machines, timbering machines, rope, mine cars, locomotives, safety equipment, lubricants, explosives, jacks, fans, storage batteries, and a vast array of other items of interest and importance to those engaged in coal mining. Many new products are included and an extensive number are being introduced to the industry for the first time. Representatives and engineers of the manufacturers will be on hand at the various exhibits to discuss the application and working features of their companies' products.

HOWARD I. YOUNG
President
American Zinc, Lead & Smelting Co.
President, American Mining Congress

The 1949 Coal Show strikes a new high in cooperation between progressive mine operators and manufacturers in advancing efficiency and safety in the production of high quality fuel for the Nation's needs. The discussions of industry problems, including the latest developments in operating practice—the magnificent exhibits of new and improved mechanical equipment for all phases of mining and preparation—and the opportunity for exchanging views with leaders from other fields—make this great Convention and Exposition a "must" for wide-awake mining men—not only in coal but in metal and nonmetallic mines. To those who think in terms of socialization of our mines and industries, the Coal Show is an impressive object lesson in the progress toward better things that is possible only in a free enterprise system.

Howard I. Young

Entertainment

Coal Show week will also afford opportunities to relax and do some "verbal" mining with old and new coal mining friends. On two evenings there will be get-togethers for the entire convention crowd in the Arena of the Public Auditorium where ample space is available to take care of a large crowd. Tuesday the annual Coal Miners Party promises a good time for everybody who attends this informal gathering. There will be a fine buffet supper, music, dancing, entertainment and fun

(*Continued on page* 55)

Program

Monday, May 9

MORNING—Open for Inspection and Study of Exhibits

●

2:00 P. M.—TRACKLESS MINING

Methods of Belt Conveyor Loading

A. E. Long, Production Superintendent, Clearfield Bituminous Coal Corp.

A. B. Crichton, Jr., Assistant to President, Johnstown Coal & Coke Co.

Robert Fletcher, Engineer, J. H. Fletcher Co.

V. D. Hanson, Construction Engineer, Pittsburgh Coal Co.

C. W. Thompson, Asst. Manager, Wierton Coal Co.

Tractors and Trailers for Supply Haulage

G. O. Tarleton, Vice-President, Consolidation Coal Co. (Ky.)

A Symposium of Continuous Mining

Gerald von Stroh, Director of Development, Bituminous Coal Research, Inc.

G. S. Jenkins, Vice-President, Consolidated Coal Co.

J. J. Snure, Production Manager, Rochester & Pittsburgh Coal Co.

C. H. Snyder, President, Sunnyhill Coal Co.

●

2:00 P. M.—MAINTENANCE AND VENTILATION

Maintenance of Underground Equipment

W. F. Diamond, General Superintendent, Marianna Smokeless Coal Co.

Maintenance of Preparation Plant Equipment

H. D. Bowker, Assistant General Manager, West Virginia Coal & Coke Corp.

Auxiliary Ventilation

R. G. Heers, Manager, Kaiser Co., Inc.

R. J. Bowen, Chief Mine Engineer, Geneva Steel Co.

Tuesday, May 10

10:00 A. M.—UTILIZATION AND MARKETING

National Fuel Reserves for Future Fuel Supplies

Arno C. Fieldner, Chief, Fuels & Explosives Division, U. S. Bureau of Mines

Depreciation Allowances in Relation to New Capital Outlays

T. H. Bierce, Assistant Treasurer, Rochester & Pittsburgh Coal Co.

Trends in Consumer Demand

George A. Lamb, Manager, Business Surveys, Pittsburgh Consolidation Coal Co.

●

2:15 P. M.—FACE OPERATIONS

Cutting and Drilling with Tungsten-Carbide Bits

Carl A. Burgener, Div. Engineer, Peabody Coal Co.

Methods of Breaking Down Coal at the Face

W. O. Smith, General Superintendent, Luzerne-Graham Mining Corp.

Use and Care of Trailing Cables

C. C. Ballard, Mech. Engineer, The New River Co.

E. W. Davis, Chief Engineer, Simplex Wire & Cable Co.

●

2:15 P. M.—STRIP MINING

Recent Developments in Overburden Drilling

Howard Frisbie, Assistant Superintendent, Broken Aro Coal Co.

Blasting in Open-Pit Mining

(a) With Liquid Oxygen Explosive—Don B. McCloud, President, Airmite-Midwest, Inc.

(b) With Fixed Explosives—A. B. Austin, Assistant District Manager, Hercules Powder Co.

MEET OUR SPEAKERS

On Pages 52-55

Deep Stripping Methods

(a) Tower Excavator—HAROLD HICKS, Engineer, and HOWARD TRUAX, General Superintendent, Truax-Traer Coal Co.

(b) Large Shovels—ANDREW HYSLOP, JR., Chief Engineer, and RUSSELL MCHUGH, Chief Engineer in Charge Stripping, Hanna Coal Co.

(c) Large Draglines—ARTHUR E. DICK, JR., President, and DONALD B. DICK, Dick Construction Co.

●

TUESDAY EVENING—COAL MINERS PARTY

Wednesday, May 11

10:00 A. M.—SURFACE PREPARATION

Dewatering and Drying Coal

(a) Methods and Equipment for Washed Coal—ORVILLE LYONS, Research Engineer, Battelle Memorial Institute

(b) Heat Drying Raw Slack—J. C. JOHNSTON, Preparation Engineer, Eastern Gas & Fuel Associates

(c) Effect of Moisture on Surface Screening—WILLIAM R. CALER, Preparation Engineer, Enos Coal Mining Co.

Dense Media Separation Process

HARRADON RANDALL, President, Rhoads Contracting Co., and EDGAR SCHWEITZER, Mechanical Engineer, Lehigh Valley Coal Co.

●

2:15 P. M.—UNDERGROUND HAULAGE

Locomotive Dispatching by Telephone and Radio

FRANK EUBANKS, Superintendent Mechanical Maintenance, Old Ben Coal Corp.

Latest Developments in Belt Haulage

CAREL ROBINSON, Consulting Engineer, Robinson & Robinson

Shafts vs. Slopes for Hoisting

PAUL WEIR, President, Paul Weir Co.

2:15 P. M.—STRIP MINING

Current Anthracite Stripping Practices

CHARLES E. BROWN, Mining Engineer, Philadelphia & Reading Coal & Iron Co.

Contour Mapping by Aerial Photography

GEORGE HESS, Engineer, Aero Service Corp.

Practices in Open-Pit Power Distribution

JOHN HUEY, Electrical Engineer, United Electric Coal Cos.

DAVID STOETZEL, Application Engineer, General Electric Co.

Stripped Land Regeneration

A. G. CHAPMAN, Chief, Central States Forest Experiment Station

●

2:15 P. M.—STEEP PITCH MINING

A Round Table Discussion—Describing Operations in Anthracite, Alabama and Canadian Northwest

D. E. INGERSOLL, Division Superintendent, Philadelphia and Reading Coal & Iron Co.

I. W. MILLER, General Superintendent, Black Diamond Coal Mining Co.

T. H. WILSON, General Manager, Crows Nest Pass Coal Co.

Thursday, May 12

10:00 A. M.—MANAGEMENT

Management-Employe Responsibility for Mine Safety

CHARLES W. CONNOR, Manager, Mining Division, Armco Steel Corp.

Attracting Young Men to the Coal Industry

HENRY C. WOODS, Chairman of the Board, Sahara Coal Co.

Management-Employe Relations

A panel discussion by industry leaders

●

AFTERNOON—Open for Inspection and Study of Exhibits

●

EVENING—ANNUAL BANQUET

COAL SHOW

Manufacturers DIVISION

J. H. FULFORD
Vice-President
Jeffrey Manufacturing Co.
Chairman

*Allis-Chalmers Mfg. Co.
Alloy Steel & Metals Co.
*American Brake Shoe & Foundry Co.
American Manganese Steel Division
American Brattice Cloth Corp.
*American Car & Foundry Co.
American Chain & Cable Co.
*American Cyanamid Co.
American Mine Door Co.
Anaconda Wire & Cable Co.
*Atlas Powder Co.

Baker-Raulang Co.
Barber-Greene Co.
Bixby-Zimmer Engineering Co.
Bowdil Co.
Broderick & Bascom Rope Co.
*Brown-Fayro Co.
Bucyrus-Erie Co.

Cambridge Machine & Supply Co.
Card Iron Works Co., C. S.
Cardox Corp.
Caterpillar Tractor Co.
*Central Frog & Switch Co.
Central Mine Equipment Co.
Centrifugal & Mechanical Industries, Inc.
Chicago Pneumatic Tool Co.
Cincinnati Mine Machinery Co.
Cities Service Oil Co.
Clarkson Mfg. Co.
Colorado Iron Works Co.

D-A Lubricant Co., Inc.
Deister Concentrator Co.
Differential Steel Car Co.
Dow Chemical Co.,
Great Western Division

Duff-Norton Mfg. Co.
*Du Pont de Nemours & Co., Inc., E. I.

*Edison, Inc., Thomas A.
Eimco Corp.
Electric Storage Battery Co.
*Elreco Corp.
Ensign Electric & Mfg. Co.
*Enterprise Wheel & Car Corp.
Euclid Road Machinery Co.

Fairmont Machinery Co.
Firestone Tire & Rubber Co.
Flood City Brass & Electric Co.

Gardner-Denver Co.
*General Electric Co.
*Goodman Mfg. Co.
Goodrich Co., B. F.
Goodyear Tire & Rubber Co.
Gorman-Rupp Co.
Gould Storage Battery Corp.
Gruendler Crusher & Pulverizer Co.
Guyan Machinery Co.

Harnischfeger Corp.
Helmick Foundry-Machine Co.
*Hendrick Mfg. Co.
Hendrix Mfg. Co., Inc.

* Charter Members.

*Hercules Powder Co.
Hewitt-Robins Incorporated
Heyl & Patterson, Inc.
*Hockensmith Corp.
*Holmes & Bros., Inc., Robert
*Hulburt Oil & Grease Co.

Independent Pneumatic Tool Co.
Ingersoll-Rand Co.
International Nickel Co., Inc.
Interstate Equipment Div.,
Yara Engineering Corp.
Irwin Foundry & Mine Car Co.
*I-T-E Circuit Breaker Co.

*Jeffrey Mfg. Co.
Johnson-March Corp.
*Joy Mfg. Co.

Kanawha Mfg. Co.
Kansas City Structural Steel Co.
Kensington Steel Co.
Koehler Mfg. Co.

LaBour Co., Inc.
Lee-Norse Co.
LeRoi Co., Cleveland Div.
*Leschen & Sons Rope Co., A.
*Link-Belt Co.
Longyear Co., E. J.

*McGraw-Hill Publishing Co.
McLanahan & Stone Corp.
*McNally-Pittsburg Mfg. Corp.
Mack-International Motor Truck Corp.
Macwhyte Company
Marion Power Shovel Co.
Mechanization, Inc.
*Mine Safety Appliances Co.
Mines Equipment Co.
Mine & Smelter Supply Co.
Mining Machine Parts, Inc.
Mosebach Electric & Supply Co.
Mott Core Drilling Co.
*Myers-Whaley Co., Inc.

National Electric Coil Co.
National Malleable & Steel Castings Co.
National Mine Service Co.
Nordberg Mfg. Co.

*Ohio Brass Co.
Ohio Oil Co.
Okonite Co.,
Hazard Insulated Wire Works Division
Oliver Iron & Steel Corp.
Osmose Wood Preserving Co.
Owens-Corning Fiberglas Corp.

Pacific Foundry Co., Ltd.
Page Engineering Co.
Paris Mfg. Co.
Penn Machine Co.
Pennsylvania Electric Coil Corp.
*Phillips Mine & Mill Supply Co.
Pittsburgh Gear & Machine Co.
Post-Glover Electric Co.
Precision Chain Co.
Productive Equipment Corp.
Prox Co., Inc., Frank

Quaker Rubber Corp.

Raybestos-Manhattan, Inc.
Reliance Electric & Engineering Co.
*Roberts & Schaefer Co.
*Roebling's Sons Co., John A.
Rome Cable Co.

Safety First Supply Co.
Salem Tool Co.
Sauerman Bros., Inc.
Sheffield Steel Corp.
*Simplex Wire & Cable Co.
Simplicity Engineering Co.
*S K F Industries, Inc.
Sprague & Henwood, Inc.
Stearns-Roger Mfg. Co.
Stephens-Adamson Mfg. Co.
Sterling Steel Casting Co.

Tamping Bag Co.
Templeton, Kenly & Co.
Texas Co.
*Timken Roller Bearing Co.
Tool Steel Gear & Pinion Co.
Traylor Engineering & Mfg. Co.
*Tyler Co., W. S.

Ultra-Violet Products, Inc.
Union Iron Works
Union Wire Rope Corp.
*United Engineers & Constructors, Inc.
U. S. Rubber Co.,
Wire & Cable Department
U. S. Rubber Co.,
Mechanical Goods Division
*U. S. Steel Corp. Subsidiaries

Vulcan Iron Works Co.

Wedge Wire Corp.
*Weir Kilby Corp.
Western Machinery Co.
*Westinghouse Electric Corp.
West Steel Casting Co.
West Virginia Steel & Mfg. Co.
Worthington Pump & Machinery Corp.

Our Speakers

Trackless Mining

A. B. Crichton, Jr.
Johnstown Coal & Coke Co.

Robert Fletcher
J. H. Fletcher Co.

Photos not available:

A. E. Long
Clearfield Bituminous Coal Corp.

C. H. Snyder
Sunnyhill Coal Co.

V. D. Hanson
Pittsburgh Coal Co.

G. S. Jenkins
Consolidated Coal Co.

Gerald von Stroh
Bituminous Coal Research Inc.

J. J. Snure
Rochester & Pittsburgh Coal Co.

G. O. Tarleton
Consolidation Coal Co. (Ky.)

C. W. Thompson
Weirton Coal Co.

Maintenance and Ventilation

H. D. Bowker
West Virginia Coal & Coke Co.

W. F. Diamond
Mariana Smokeless Coal Co.

Photos not available:

Ray Bowen
Geneva Steel Co.

R. G. Heers
Kaiser Co., Inc.

Utilization and Marketing

T. H. Bierce
Rochester & Pittsburgh Coal Co.

Arno C. Fieldner
U. S. Bureau of Mines

George A. Lamb
Pittsburgh Consolidation Coal Co.

Face Operations

C. C. Ballard
The New River Co.

Carl A. Burgener
Peabody Coal Co.

E. W. Davis
Simplex Wire & Cable Co.

W. O. Smith
W. G. Duncan Coal Co.

Surface Preparation

Photos not available:

J. C. Johnston
Eastern Gas & Fuel Associates

Edgar Schweitzer
Lehigh Valley Coal Co.

William R. Caler
Enos Coal Mining Co.

Orville Lyons
Battelle Memorial Institute

H. R. Randall
Rhoads Contracting Co.

COAL SHOW

Strip Mining

A. B. Austin
Hercules Powder Co.

Charles E. Brown
Philadelphia & Reading Coal & Iron Co.

A. G. Chapman
Central States Forest Experiment Station

Photos not available:

Donald B. Dick
Dick Construction Co.

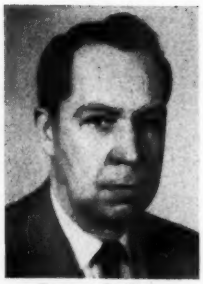
Arthur E. Dick, Jr.
Dick Construction Co.

Don B. McCloud
Airmite-Midwest, Inc.

Russell McHugh
Hanna Coal Co.

Howard Truax
Truax-Traer Co.

Howard Frisbie
Broken Aro Coal Co.



George L. Hess
Aero Service Corp.

Harold Hicks
Truax-Traer Coal Co.

Andrew Hyslop, Jr.
Hanna Coal Co.

John J. Huey
United Electric Coal Cos.

David Stoetzel
General Electric Co.

Underground Haulage

Frank Eubanks
Old Ben Coal Corp.

Carel Robinson
Robinson & Robinson

Paul Weir
Paul Weir Co.

D. E. Ingersoll
Philadelphia & Reading Coal & Iron Co.

Steep Pitch Mining

I. W. Miller
Black Diamond Coal Mining Co.

T. H. Wilson
Crow's Nest Pass Coal Co., Ltd.

Charles W. Connor
Armco Steel Corp.

Management

Henry C. Woods
Sahara Coal Co.

Lighter Moments

— Tuesday —

COAL MINERS PARTY

Buffet Supper—Entertainment—Dancing

Fun for all

— Thursday —

ANNUAL BANQUET

Little speaking—Lots of floor show

***Special note to Baseball Fans*—The Cleveland Indians will be in action. See their schedule, page 56.**

throughout the evening. Beer and "accessory" soft drinks will be served free. A successful evening with a fine coal mining crowd is guaranteed.

The Annual Banquet—culminating event of the Coal Show—takes place on Thursday evening. This outstanding occasion is the real social function of the coal mining year. An excellent dinner will be followed by brief introductions of honored guests and a floor show better than ever before. After-dinner speaking will be curtailed to a minimum by Toastmaster L. Ebersole Gaines.

The other two evenings, Monday and Wednesday, are

Staff of American Mining Congress

Julian D. Conover
Secretary

A. W. Dickinson
Legislation

P. D. McMurrer
Assistant to Secretary

Harry L. Moffett
Publicity

G. B. Southward
Mechanization Engineer

Sheldon P. Wimpfen
Editor
Mining Congress Journal

Ralph Duysters

Frank Moran

Field Representatives—Mining Congress Journal

left open for convention goers to have an opportunity to join private parties, see Cleveland, attend the ball game, or entertain themselves as they will.

Special daytime entertainment features are being planned for the ladies, in addition to the regular evening functions which they are urged to attend. Ladies are requested to register at the Ladies' Headquarters on the mezzanine floor of the Hotel Cleveland.

Baseball fans have a special opportunity to see the championship Cleveland Indians in action. Their at-home schedule for early May is as follows:

Philadelphia—Wednesday, May 4.

Boston—Thursday, May 5, and Saturday, May 7.

Washington—Sunday, May 8 (doubleheader), and Tuesday, May 10.

New York—Wednesday, May 11 (night game).

Orders for seats together with check or money order should be sent in promptly to Cleveland Baseball Corp., The Stadium, Cleveland 13, Ohio. Reserved seats cost $1.50 each and box seats $2.00 each, tax included. Join your fellow fans and take in a game.

An attentive audience at the 1947 Coal Show

FROM MAY 9 TO MAY 12, the greatest variety and assortment of coal mining machinery, equipment, and supplies that has ever been presented before the coal mining industry will be under one roof at Cleveland's huge Public Auditorium. A total of 223 manufacturers and suppliers will be represented; the leaders of the field among those whose business it is to supply the machinery and equipment essential to maintain a continuous flow of coal. Exposition visitors will have the full benefit of all the planning and effort that have been expended to assemble these comprehensive exhibits of practical value to coal mine operators. Many of the displays will contain operating equipment that will enable visitors to make a detailed study of performance characteristics.

Under the leadership of J. H. Fulford, vice-president, Jeffrey Manufacturing Co., and chairman of the Manufacturers Division of the American Mining Congress, the manufacturers are cooperating to show coal mining men equipment developments of the past year and many which have been under development for a much longer period. A number of units to be introduced to the coal industry for the first time will exemplify the progress that has been made.

Some of the highlights of the individual exhibits are outlined in the brief preview presented in the following pages. Details of the specific displays are too numerous for mention here. Every coal mining man will derive great value from a careful study of the exhibits—so allow ample time to see *all* the displays in this outstanding Exposition.

• **ACME MACHINERY CO.**

A model 60 rubber-tired compressor, which is air-cooled, and a model 105 rubber-tired compressor, along with a model 105 track-mounted machine, will be on display. A mine stoper only 23 in. in over-all length, designed for drilling vertical holes for extremely close quarters, will be included in the exhibit. *In charge—Matison Evans.*

• **AHLBERG BEARING CO.**

Will feature its roller-bearing mine car wheels in an exhibition of its line of standard ball bearings, self-aligning ball bearings, ball-bearing pillow blocks, and Bower tapered roller bearings. *In charge—P. H. Staerk.*

• **ALLIS CHALMERS MFG. CO.**

Highlight of the exhibit will be the company's new shaker for emptying coal, cinders, ore, slag, coke, sand,

and gravel and other granular materials from drop-bottom gondola cars. Also included in the display will be a 5 by 12-ft Riplo-Flo, double-deck screen in operation, a 6 by 16-ft, low-head screen with dewatering deck, a cutaway of the low-head screen's mechanism, and a 14 by 16-in. solids-handling pump exploded into its five main parts. *In charge—J. E. Edelman.*

• **ALLIS CO., LOUIS**

No description available.

• **AMERICAN AIR FILTER CO., INC.**

Will display new dust collectors, a Type N Roto-Clone and a Type W Roto-Clone, along with a plastic model of the Cycoil oil bath cleaner used to filter engine and compressor intake air. *In charge—John Kane.*

• **AMERICAN BRATTICE CLOTH CORP.**

Mine vent flexible tubing and ABC brattice cloth will be on display. The application of demountable couplings and the various suspension methods will be demonstrated as well as the flame resistance of the brattice cloth. *In charge—D. Blaine Mikesell.*

• **AMERICAN BRIDGE CO.**

(See U. S. Steel Corp.)

• **AMERICAN CAR AND FOUNDRY CO.**

A modern large, eight-wheel, automatic, drop-bottom mine car with a capacity of 30 tons will be the principal feature of the exhibit. This car is equipped with automatic couplers, draft gears, roller side bearings, steel wheels with anti-friction bearings, and hand operated brakes on rear truck. This 43-ft car will appear before a background display of several colored transparencies showing other types of ACF mine cars in service at various coal properties. *In charge—F. J. Bogard.*

• **AMERICAN CHAIN & CABLE CO., INC.**

The American Cable and Hazard Wire Rope Divisions will exhibit wire rope for use in coal mining and on coal mining equipment for both undergound and stripping operations. *In charge—W. W. Runkle.*

• **AMERICAN CYANAMID CO.**

In a joint display the Mineral Dressings Division and the Explosives Department will feature general lines of explosives, blasting accessories, plus equipment and products of the Mineral Dressings Division pertaining to the coal industry. *In charge—M. J. Wixson.*

• **AMERICAN MINE DOOR CO., THE**

A track cleaner, automatic switch thrower, and rock dusting machine will be on display with the main feature of the exhibit, a track cleaner with a loading capacity of one ton per hour. *In charge—Chas. Vignos and Glenn Gurney.*

• **AMERICAN STEEL & WIRE CO.**

(See U. S. Steel Corp.)

• **ANACONDA WIRE & CABLE CO.**

Diorama cutouts and models will show the application of wire and cable to various types of coal mining machinery. New cable developments will be presented in an effective display. *In charge—E. F. Luna.*

• **ANDERSON MFG. CO., ALBERT & J. M.**

Pow-R-Gard and Ground-Gard electric power distribution equipment for portable mining machines will be on display for the first time. These new developments are designed to furnish automatic protection from such electrical hazards as ground faults, cable faults, short circuits, and overloads. Units on display will be in dust tight, explosion proof enclosures for either a-c or d-c systems. *In charge—F. C. Messenger.*

• **ARMCO DRAINAGE & METAL PRODUCTS, INC.**

Will exhibit a corrugated metal fan duct, a Steelox metal fan house, and a liner plate mine entry or escapeway. Other items included in the display will be ARMCO corrugated metal culverts, conveyor covers, corrugated metal ventilation pipe, and air pressure pipe and couplings. *In charge—W. H. Spindler.*

• **ARMSTRONG-BRAY & CO.**

Will exhibit both heavy and light duty conveyor belt splices, and items for repair of rips and tears of conveyor belts. Sections of belts spliced together will demonstrate the improvements that have been made with newly designed nuts used on Plategrip fasteners. *In charge—Fred Bishop.*

• **ATLAS POWDER CO.**

A greatly improved and expanded Rockmaster millisecond delay blasting system will be featured in the display. The new system, designed for greater control over fragmentation, throw, and vibration, is being shown for the first time. *In charge—John L. Romig.*

• **AUSTIN POWDER CO.**

Various sizes of augers will be displayed against a coal mine setting which will be highlighted by a series of product messages. Color photographs and translites of bits handled by the company and a complete display of its line of dynamites, powders, and permissible explosives will be shown. Actual drilling tools will make up a portion of the exhibit. *In charge—Neil Baker.*

• **BAKER-RAULANG CO.**

The Baker Industrial Truck Division will exhibit the Type TJCX tractor, Type SB timbering machine and Type YA-36 Trike as well as Fletcher trailers. Major features of the exhibit will be actual demonstrations of the timbering machine and the Trike under simulated mining conditions. *In charge—D. L. Darnell.*

• **BARBER-GREENE CO.**

A series of Kodachrome transparencies and colored photo-murals of underground mining scenes will show material handling machinery in use. Three sections of B-G belt conveyors will be included in the display; one will be the standard truss frame, three-roll troughing carrier type and the other two sections will be newly developed underground types, employing special channel or angle frames and low-backed carriers. *In charge—R. W. Richardson.*

• **BEARING SERVICE CO.**

A complete display of all types of single row, double row, angular contact and thrust ball bearings, as well as cylindrical and spherical roller bearings will be exhibited. Motor cartridge units designed to make simple the changeover of stationary electric motors to anti-friction bearings will be featured. A prominent position will be held by the various anti-friction units designed for troublesome applications. *In charge—Wm. F. Chase.*

• **BETHLEHEM STEEL CO.**

Prefabricated mine track will be featured in the company's exhibit. A model will be used to demonstrate how the various elements of track can be moved from one location to another. Enlarged photographs of installations of steel mine ties, mine rail, turnouts, crossings, double switches, frogs, mine cars, and hollow drill tool steel will

form a background for displays of sections of various steel mine ties, a combination switch stand with reflector target, a mine car truck for a 10-ton, eight wheel mine car, and hollow drill tool steel. A display of wire rope showing photographs of manufacturing and applications of various types of wire rope will be included. *In charge—A. A. Warg.*

• **BIRD MACHINE CO.**

A full size Bird centrifugal coal filter for dewatering fine coal after washing will be the main attraction. A cutaway section will show interior construction and operation. Photographs of a number of installations and coal preparation plants will form a background. *In charge—George Sherrerd.*

• **BITUMINOUS COAL INSTITUTE**

Wall panels serving as a background for a lounge will pictorially convey the various activities of the Institute in its aim to promote better public relations and to acquaint the American public with the progress made by the coal mining industry towards better mechanization and utilization. The increasing significance of coal to the national economy will be stressed. *In charge—James H. Cunningham and T. A. Day.*

• **BITUMINOUS COAL RESEARCH, INC.**

Smokeless residential heating equipment, overfire jets for industrial smoke abatement, and charts depicting various phases of BCR research will be on display. *In charge—John W. Igoe.*

• **BIXBY-ZIMMER ENGINEERING CO.**

A 3 by 6-ft vibrator equipped with Beezee screen cloth will be in operation with a stroboscopic light showing the action of the screen with the vibrator in motion. Also included in the display will be standard sizes of recently developed screen for use in vibrators, shakers, stationary drag conveyors, and centrifugal driers. *In charge—Walter H. Zimmer.*

• **BLACKHAWK MFG. CO.**

Standard products including socket wrenches, hydraulic hand jacks from 1½ to 100-tons capacity, hydraulic maintenance equipment, including hydraulic pipe benders as well as hydraulic pumps, valves, and controls will comprise the display. *In charge—Phillip G. Brumder.*

• **BOWDILL CO., THE**

In front of a layout showing various parts of standard items of manufacture, a 9-ft 1ORU bar, with chains and bits operating, will be displayed. *In charge—Charles L. Bowman.*

• **BRODERICK & BASCOM ROPE CO.**

Miniature wire rope making machines will be featured in the display. These machines are a strander, fabricating a 1/16-in. diam, 19-wire strand and a vertical closer which forms six small strands of seven wires around a fiber core. Also exhibited will be Yellow Strand braided safety slings. *In charge—Fred Zimmerman.*

• **BROWN-FAYRO CO., THE**

Equipment on display will include a new heavy-duty, car-spotting hoist; mine gathering pumps; a four-axle type, spring-bumper equipped, steel mine car; permissible tubing blowers; and other miscellaneous items such as mine car wheels, rerailers, derailers, and coal spray equipment. *In charge—Fred M. Davis and Murray W. Tuck.*

• **BUCYRUS-ERIE CO.**

Photographic murals of large stripping excavators at work in various open-pit properties will form a background for a comfortable lounge. An enlarged center panorama will depict the 1050-B stripper in action. Three 1150-B walking draglines will be shown in flanking panels. A 550-B shovel will also be among the side pictures. Two machines will be shown in translite color photographs.

• **BUDA CO., THE**

Will feature Diesel engines used to power large capacity trucks used in strip mining and open-pit operations. Two eight-cylinder and one six-cylinder Diesel engine will be included in the exhibit. *In charge—H. H. Cohenour.*

• **CARBIT, INC.**

Carbide cutting and drilling equipment for deep and strip mines will be featured. Cutters for every type of mining and drills in all sizes and specifications will be available for examination. Augers, in both regular and sectional types, with all necessary accessories will be included. *In charge—Henry E. Schweinsberg.*

• **CARDOX CORP.**

In addition to Cardox mining equipment for dislodging coal without explosion, there will be on display the Cardox-Hardsocg horizontal and vertical drills and the new self-propelled horizontal drill. The Cardox-Hardsocg continuous rotary cutter with augers ranging from 20-48-in. diam for mining coal direct will be featured. A complete line of drilling equipment for surface and underground drilling with a full range of tungsten-carbide tipped cutter heads will be exhibited.

• **CARNEGIE-ILLINOIS STEEL CORP.**

(See U. S. Steel Corp.)

• **CATERPILLAR TRACTOR CO.**

Highlighting the extensive exhibit will be the new 500-hp "Caterpillar" Diesel D397 engine. This 12-cylinder engine has just entered full production. Other items will be shown including engines and track-type and wheel-type tractors; bulldozers and scrapers; allied equipment such as the Hyster Hystaway, the Athey rock trailer, and the Trackson T6 Traxcavator with coal bucket. *In charge—C. E. Jones.*

• **C & D BATTERIES, INC.**

Plans to show illuminated transparencies of the construction of Sylver-Clad batteries. Hardwood tray battery assemblies for permissible locomotive equipment will be displayed together with steel tray shuttle car battery designs. A complete line of hard rubber Monobloc Diesel batteries will be shown as well as explosion-proof auxiliary power batteries. The latest C & D Plasticell design of Monobloc plastic container batteries for telephone and auxiliary power will be displayed. *In charge—A. L. Crothers and J. J. Green.*

• **CENTRIFUGAL AND MECHANICAL INDUSTRIES, INC.**

A sound motion picture of several C-M-I continuous centrifugal dryers in actual field operations will be shown at different installations where the application is varied. Incorporated in the picture will be scenes of various stages of manufacturing and engineering. *In charge—P. W. Bigley.*

• **CHEATHAM ELECTRIC SWITCHING DEVICE CO.**

Operating exhibits of electrically operated track switches and derails, trolley contact devices, manually operated momentary contact switches, switch and derail indicators, control panels, circuit controllers, and associated equipment for electrical operation of main line track switches and derails for coal mining operations will be available for inspection. *In charge—Everett C. Brown.*

• **CHESAPEAKE AND OHIO RAILWAY CO., THE**

An operating model of the world's largest single-unit locomotive will dramatize the exhibit. Accurately built to ¼-in. scale, the working model is a faithfully executed replica of C & O's new fleet of "500's," the first coal-burning, steam-turbine-electric locomotives ever built.

• **CHICAGO PNEUMATIC TOOL CO.**

A new permissible tramdrill in operation will be featured in the exhibit. Hand-held and post-mounted coal drills will be included in the display of the latest equipment for modern coal mining. *In charge—L. J. Walker.*

• **CINCINNATI MINE MACHINERY CO., THE**

A complete line of coal cutting chains suitable for operation with all types of cutting machines and Duplex and Stanex bits will be featured. Enlarged photographs showing Cincinnati chains, bits, and cutterbars in actual service will be shown and the exhibit will feature a novel arrangement of two revolving large scale cutter chain units. *In charge—A. O. Bruestle and John R. Cartlidge.*

• **CITIES SERVICE OIL COS.**

The exhibit will depict Cities Service as an oil producing, refining, and marketing organization with special emphasis placed on lubricants, petroleum specialties, and combustion analyzers. The Cities Service heat prover will be in operation to demonstrate its advantages to consumers of any type fuel. *In charge—J. J. Dorr.*

• **CLARKSON MFG. CO., THE**

The Clarkson type 28FA "Redbird" pneumatic loader with 15-hp motor will be displayed. *In charge—Clyde E. Clarkson.*

• **CLEVELAND WORM & GEAR CO., THE**

A Speedaire fan-cooled, worm gear reduction unit will be featured in operation to demonstrate the rapid removal of heat by means of a continuous high velocity air stream. A cutaway model of a standard unit as well as a worm and gear set will show the internal parts. *In charge—G. T. Collatz.*

• **COAL AGE**

A comfortable lounge will provide convention goers a place to consult publication representatives. *In charge—R. W. Davis.*

• **COAL MINE EQUIPMENT SALES CO.**

A miniature locomotive will illustrate the rebuilding work performed. Novelty age teller cards will commemorate the 38th year of the organization. *In charge—Frank J. Wolfe, Sheldon J. Wolfe, James C. Lindsay, and F. M. "Spike" Neil.*

• **COFFING HOIST CO.**

Plans to exhibit its complete line of hoisting equipment, including Quik-Lift electric hoists, ratchet lever hoists with capacities ranging from ¾-ton to 15 tons, a hoist-jack, Mighty-Midget puller, and other miscellaneous tools. *In charge—J. R. Coffing.*

• **COLORADO FUEL & IRON CORP.**

(See Wickwire Spencer Steel Division.)

• **COLUMBIA STEEL CO.**

(See U. S. Steel Corp.)

• **COMBUSTION ENGINEERING—SUPERHEATER, INC.**
Flash Dryer Division

Plans to exhibit a plastic working model of the C-E Raymond flash drying system for fine coal. The action and flow of material in the system during the drying operation will be demonstrated. *In charge—C. W. Gordon.*

• **CRICHTON CO., THE; EQUIPMENT DIVISION**

The new Crichton all mechanical hand-held coal and rock drill for one man operation will be on display. Visitors will be able to examine this drill which operates by means of a flexible shaft connected to a cutting machine operating at any speed. In addition, face pumps, face rockdusters, timber saws, supply hoists, and other face units will be shown. *In charge—A. B. Crichton, Jr.*

• **CUMMINS ENGINE CO.**

An activated, cutaway version of the 275-hp model NHBS-600 Diesel engine will be featured. Included in the exhibit will be a cutaway model of a fuel pump. A selection of translite photographs will illustrate Cummins Diesels powering various types of trucks, earth movers, excavators, and other equipment used in the coal mining industry. *In charge—Howard P. Sharp.*

• **CYCLONE FENCE DIVISION, AMERICAN STEEL & WIRE CO.**

(See U. S. Steel Corp.)

• **D-A LUBRICANT CO., INC.**

Heavy-duty lubricants and engine oils will be in the display where factory and sales representatives will be on hand to explain and demonstrate samples of the full line of company products. *In charge—Robert J. Binford, Jr.*

• **DAVIS CO., NELSON L.**

An operating model of a Heavy Media float and sink coal processing plant will be featured. An exhibit will explain the advantages to be derived from the use of this versatile process. Flow sheets and illustration of various coal processing plants now being built will form a background for the scale model operating plant. *In charge—N. L. Davis, G. S. Jaxon, S. M. Parmley, R. P. Sayers, and S. A. Miller.*

• **DEISTER CONCENTRATOR CO., THE**

The latest type SuperDuty Diagonal-Deck coal washing table will be exhibited in one-fourth commercial size and in operation. Initial announcement will be made of the new Concenco SuperSorter, a giant classifier for hydraulic classification of feed. A photographic enlargement of eight cell Concenco SuperSorters, placed in operation late in 1948 will be a part of the exhibit. Also featured will be Concenco spray nozzles for use in wet screening operations and propulsion of materials in launders. *In charge—Don A. Weber.*

• **DEISTER MACHINE CO.**

A Deister vibrating screen in operation will be a feature of the exhibit. Photographs of actual installations will demonstrate the wide range of service of the company's products. *In charge—Irwin F. Deister.*

• **DE LAVAL STEAM TURBINE CO.**

Plans to exhibit De Laval worm gear speed reducers, an IMO rotary pump and a standard De Laval centrifugal pump.

• **DEMING CO., THE**

A vertical turbine pump, self-priming pump, centrifugal pump, small sump drainer, and horizontal piston-type, mine-gathering pump will be included in the exhibit.

• **DENVER EQUIPMENT CO.**

A No. 8 Denver "Sub-A" flotation machine in operation will be the center of attraction. Preceding this unit, a Denver super-agitator and conditioner will condition the coal pulp with flotation reagents. *In charge—Henry J. Gisler.*

• **DETROIT DIESEL ENGINE DIV., GENERAL MOTORS CORP.**

A cutaway display of the new General Motors torque converter and fluid coupling unit engineered to the GM Series 71 two-cycle Diesel engine will be shown demonstrating the combination power unit. The unit offers a combination adaptable to a wide range of mining and contracting machinery. Other engines on display include a 60-kw, a-c generator set as well as an operating cutaway of a three-cylinder GM Series 71 Diesel. *In charge—M. Q. Fullington.*

• **DIFFERENTIAL STEEL CAR CO.**

Plans an exhibit of a large capacity all steel mine car.

• **DOOLEY BROS.**

A painted background will simulate mine drills and arms being used in a coal mine. A continuous slide projector will show kodachrome pictures of actual mining operations. Two mine trucks equipped with two mine drills and arms will be available for examination.

• **DUFF-NORTON MFG. CO., THE**

Models of the various types of mine jacks needed in modern coal mining will be on display together with actual application display units. Included in the exhibit will be mine roof jacks for cross timbering and mine roof support; pin-timbering and angle jacks for the new face timbering method; push-and-pull jacks, bell-base jacks, automatic lowering jacks, standard-speed jacks, cable-reel jacks, journal jacks, and hydraulic jacks. *In charge—Dale Christopher.*

• **DUPONT DE NEMOURS & CO., INC., E. I.**

Three departments will be represented in addition to a general company exhibit, featuring "What's New From Du Pont." The Organic Chemicals Department's Neoprene Section will show applications and samples of improved rubber products, made of neoprene. The Explosives Department, through a series of photographic blowups and actual demonstrations, will feature permissible dynamites, electric blasting caps, and other blasting supplies. The Fabrics & Finishes Department will feature "Ventube" synthetic rubberized tubing. *In charge—J. M. Pierson, V. A. Cosler, C. O. Terpenning, W. E. Brown, and W. D. Sparks, Jr.*

• **EDISON, INC., THOMAS A.**

The Storage Battery Division will display two typical batteries for use in mine-haulage equipment, and an animated, two-piece cell will tell the inside story of Edison steel construction. A feature of the exhibit will be a production machine in operation making positive tubes from perforated, nickeled ribbon stock. The continuous operation of this machine will transform reels of perforated steel ribbon into 4¼-in. tubes which, when filled with active material, are assembled on steel grids to make the positive plates of Edison nickel-iron-alkaline storage cells. *In charge—W. W. Gould.*

• **ELECTRIC CONTROLLER & MANUFACTURING CO., THE**

Will exhibit a Valimitor, which is a volt-ampere-limitor; Tab-weld plate resistors for motor control; frequency relay controller for wound-rotor, motor-driven aerial tramway; Line-Arc repeating sectionalizer for d-c power circuits; and Type WB brake a-c operation. *In charge—A. C. Dyer.*

• **ELECTRIC RAILWAY IMPROVEMENT CO.**

No description available. *In charge—Wm. E. Huber.*

• **ELECTRIC STEEL FOUNDRY CO.**

Will feature a display of an ESCO coal loading dipper, an ESCO standard dragline bucket, an all-cast manganese arch for a 15-cu yd stripping dragline bucket, chains, ESCO box-type teeth and adapters, and other miscellaneous items of equipment.

• **ELECTRIC STORAGE BATTERY CO., THE**

A new version of the Exide Dynalift will be on display. Entry cards will be furnished for contestants to participate in an estimating contest as to the number of times an Ironclad battery will lift itself before becoming discharged. The winner of the contest will be awarded a $50 U. S. Savings Bond. A complete line of Exide-Ironclad batteries, cutaway to show details of construction, will complete the display. *In charge—Wm. Van C. Brandt.*

• **ELLIOTT SERVICE CO.**

A display of the Elliott coal mine bulletin board service featuring special coal mine safety displays and the Elliott daily news photographs comprise the exhibit. "Management Information" will be available along with information on the Elliott employe suggestion service. *In charge—R. L. Lawrence.*

• **ELRECO CORP., THE**

Plans a display of the new safety type Qui-Connectors and Qui-Connect cable to cable splice box. The exhibit will also feature the new fuse nip and current tap of unique design for application in the coal mining industry.

• **ENSIGN ELECTRIC & MFG. CO.**

Rail bonds and feeder connectors; d-c magnetic motor starters, both standard enclosure and explosion-tested type; centrifugal interlocks for conveyors; and distribution centers featuring the Ensign lever action plug will be shown. *In charge—W. P. Dickson.*

• **ENTERPRISE WHEEL & CAR CORP.**

Two four-axle mine cars, one an all-steel car of the lift-endgate type with double-acting spring bumpers, and the other, a rotary-dump type having a spring drawhead and bumper with rubber pad to absorb the impact and a flat bottom for maximum capacity, will be featured. *In charge—W. E. Myer.*

• **ERIEZ MFG. CO.**

"Magnetic Separation Without Electricity" will be the theme of the exhibit in which a large diameter, permanent, non-electric, magnetic pulley will be in actual operation. Also a giant non-electric, plate-type magnet developed specifically for the coal industry for installation in the bottom of feed chutes will be exhibited. Included in the display will be electronic metal detector used for the detection of nonferrous metals. *In charge—R. A. Roosevelt.*

• **EUCLID ROAD MACHINERY CO., THE**

A 40-ton, bottom-dump coal hauler will be on display. A full color 16 mm sound film "Euclids Move the Earth," will be shown at regular intervals. Trips to the new Euclid assembly plant will be scheduled for interested parties.

• **FAIRMONT MACHINERY CO.**

Large photographs of plants constructed recently by the organization will form a background for a comfortable lounge. *In charge—R. W. Decker.*

• **FARMERS ENGINEERING & MFG. CO.**

Femco trolleyphones and the Femco light-weight, belt-carried, 1-to-10 shot firer will be available for a "live" demonstration. Visitors will be able to test Femco trolleyphone supervision of moving mine cars at stationary

points, as well as test the Femco 1-to-10 shot fire. *In charge—Norman F. Agnew and W. Porter Place.*

• **FARVAL CORP.**

Both manual and automatic centralized systems of lubrication will be shown in operation. A large Farval valve will be featured in transparent plastic to illustrate design features and operating principles. *In charge—G. T. Collatz.*

• **FIRTH STERLING STEEL & CARBIDE CORP.**

An animated exhibit will carry out the theme of "You can do it better, faster and cheaper with Firthite (tungsten carbide) mining bits and drills." Show cases will contain typical samples of the line of Firthite mining tools. *In charge—N. W. deBerardinis.*

• **FLEXIBLE STEEL LACING CO.**

Every visitor to the company's booth will have an opportunity to compete for a live alligator which will be given away. Hinged Flexco belt fasteners, Flexco HD belt fasteners and rip plates for conveyor belts, Alligator belt lacing for flat transmission and conveyor belts, and the new Alligator wide belt cutter will be shown. *In charge—Warren B. Paulson.*

• **FLOCKER & CO., JOHN**

Dry treated flame resistant and mildew resistant jute brattice cloth, in addition to the new plastic brattice sheeting which the company distributes for the Firestone Plastics Division, will make up the display. Featured will be an underground scene in a coal mine designed so that visitors may have an opportunity to blow torch test the brattice cloth for flame resistance. *In charge—Ralph H. Irwin.*

• **FLOOD CITY BRASS & ELECTRIC CO.**

Two products including the Junior car spotter and plunger pump will be on display in addition to a line of sealed beam headlights and fused switches, plus line material and locomotive and mining machine parts. *In charge—Harry Lehman.*

• **FULTON BAG & COTTON MILLS**

Brattice cloth and tamping bags produced by the company for the coal mining industry will be exhibited. *In charge—E. M. Hornsby.*

• **FYR-FYTER CO.**

A complete line of portable fire equipment including extinguishers ranging in sizes from one-quart to 80-gallons capacity plus a fully improved extinguisher will comprise the exhibit. An Instant Model Fyr-Fyter, using Karbaloy, will be included in the display of models designed especially for mine use. *In charge—George J. Lutz.*

• **GALIGHER CO., THE**

Equipment on display includes a two-cell Agitair flotation machine with plexiglas front which will demonstrate the actual operation of the unit. A Geary-Jennings automatic coal sampler of the screw driven type, and two Galigher chain-driven automatic coal samplers complete with cutters, one for continuous operation, and one for intermittent operation will be available for inspection. *In charge—S. L. Evans.*

• **GATES RUBBER CO., THE**

A large animated panel will tell the concave sidewall story, a patented feature of Gates belts and Vulco ropes. An oscilloscope will demonstrate the shock-absorbing characteristics of Gates belts. Other features of the exhibit will be a display of cold rubber and a panel exhibiting Gates air hose and Yellow mine hose. *In charge—Charles C. Nieman.*

• **GENERAL CABLE CORP.**

Plans a display of Super Services, heavy-duty portable cables designed for mining service. *In charge—W. W. Jericho.*

• **GENERAL ELECTRIC CO.**

Will feature a 25-ton, high-speed mine haulage locomotive and a newly designed motor to meet Bureau of Mines specification. A plastic model of a totally-enclosed, fan-cooled Tri-clad motor with photo electric starter control will be included along with a section of Cabinetrol control panels. *In charge—G. A. ReQua.*

• **GERRARD STEEL STRAPPING CO.**

(See U. S. Steel Corp.)

• **GOODMAN MFG. CO.**

Four new pieces of equipment will be featured; the 660 tractor-tread loading machine; the Goodman line of shuttle cars; a low vein shortwall cutting machine, Type 812, with full hydraulic control and built-in bugduster; and a new type of shaker conveyor drive. In addition to these innovations, an operating belt conveyor will be exhibited along with a type 460 track loader, the deluxe 512 shortwall machine, and an eight-ton modernized locomotive. *In charge—John D. James.*

• **GORMAN-RUPP CO., THE**

Will include in their exhibit a line of mine-gathering, sump, and drainage pumps for use in both shaft and strip mines. Many refinements and improvements have been incorporated in the new equipment. *In charge—Gilmore Hiett.*

• **GOULD STORAGE BATTERY CORP.**

Plans to exhibit, in addition to its batteries for use in underground haulage, a model shuttle car which will be operated by show-visitors by means of life-size controls. A new and improved battery grid, produced as a result of research developments carried out in the Gould laboratory, will be introduced to the mining industry. *In charge—M. W. Heinritz.*

• **GULF OIL CORP.**

A complete line of oils and greases for the coal industry, with special emphasis on Gulf mining machine lubricant B for cutting and loading machines, will be shown. *In charge—G. B. Burkhalter.*

• **GUYAN MACHINERY CO.**

Several different types of resistors, including those for loading machines, mining machines, locomotives, shuttle cars, inspection cars, and stationary motors will be shown. Automatic d-c motor starters, bondwelders, sealed-beam headlights for mine locomotives, and loaders will be a part of the display. Also included in the exhibit will be an airflow indicator switch. *In charge—H. V. DeJournett.*

• **HAMILTON RUBBER MFG. CORP.**

King Koal rubber conveyor belting will be featured in the exhibit which will also display conveyor belting designed for incline, slope, washing, preparation, and other types of duties in the coal mining industry. *In charge—"Hobie" Todd.*

• **HARNISCHFEGER CORP.**

A working model of the Magnetorque hoist drive, complete with boom, dipper sticks, and bucket, but with stand-

ard size control will enable visitors to handle the controls and at the same time watch the operation of the Magnetorque unit. Stationary and portable welders for maintenance work in both underground and strip mine operations will be included in the display. A two-cycle, three-cylinder P&H Diesel will be introduced. *In charge—Paul Hunter.*

• **HENDRICK MFG. CO.**

Photographs of the company's plant and of the various types of products will form a background for display of a large screen and a set of small screens showing the smallest hole in the lightest gauge and an extremely heavy perforated screen. *In charge—T. A. Warner.*

• **HENDRIX MFG. CO., INC.**

Will display a small size stripping bucket of the same design and similar construction to the 32-cu yd and 35-cu yd dragline buckets which the company has built for the coal stripping industry. *In charge—W. G. Hendrix and G .E. Trippe.*

• **HERCULES MOTORS CORP.**

A total of 20 engines and power units will be displayed including 12 Diesels. Recent models of Hercules Diesels including the eight-cylinder, and three horizontal or "flat" six-cylinder Diesel engines will be included in the exhibit. A series of 45-deg, V Diesels and gasoline engines and power units will also be shown. Of special interest is the pancake or "flat" type engine designed to meet the trend for compactness in engine application. *In charge—T. S. Klinedinst.*

• **HERCULES POWDER CO.**

Shadow boxes will illustrate the uses of Hercules explosives for coal mining. On display will be permissible types of explosives for producing coarse and fine coal, explosives for bank preparation in stripping operations, and blasting supplies. *In charge—Theodore Marvin.*

• **HEWITT RUBBER DIVISION**
Hewitt Robins Incorporated

(See Robins Conveyors Division.)

• **HEYL & PATTERSON, INC.**

A cyclone thickener, made entirely of glass, for observation purposes, will be featured in the exhibit which will also include the company's new thermal dryer. Suitably arranged lighting effects will demonstrate the operation of both units. *In charge—A. G. Gilbert.*

• **HOCKENSMITH CORP., THE PENN BODY DIVISION**

A new dump trailer with a zero mounting height and a low center of gravity will be featured in the exhibit. The unit on display will be a 16-ft, 15½-yd Morgantown type with an over-all height of less than 8 ft. Various mine car parts, including wheels, rollers, and sheaves will also be shown.

• **HUMPHREYS INVESTMENT CO., THE**

A full size Humphreys Spiral concentrator operating with minus ¼ in. to 0 coal as feed will be available for inspection. Arrangement will be such that the separating action and various products may readily be seen. *In charge—Merrill Walker or Whitman E. Brown.*

• **INTERNATIONAL HARVESTER CO.**

A 182-in. wheelbase, off highway truck-tractor; a 197-in. wheelbase unit with 18-cu yd dump body; a 180-hp Diesel power unit; and a cutaway Diesel power unit, plus a TD-18 crawler-tractor with Bucyrus-Erie hydraulic bulldozer will comprise the exhibit of products designed especially for the coal mining industry. *In charge—W. K. Perkins and Neal Higgins.*

• **INTERSTATE EQUIPMENT DIVISION, YARA ENGINEERNG CORP.**

Photographic enlargements of some outstanding aerial tramway installations of the coal fields will form a background for a comfortable lounge. Heavy-duty installations handling mine refuse will be featured in the illustrations. *In charge—Leo. J. Vogel.*

• **IOWA MFG. CO.**

A "Cedarapids" 3033 coal mill designed to produce cubical crushed coal will be on display. Included in the exhibit will be a section of underground mine conveyor and a double-deck horizontal coal screen designed for high capacity on fine sizes. *In charge—Henry J. Adams.*

• **IRWIN FOUNDRY & MINE CAR CO.**

Will show an eight-wheel mantrip car with a capacity of 32 men. Also on exhibition will be a truck from the company's eight-wheel mine cars plus an idler set for a belt conveyor. *In charge—Gray F. Sensenich.*

• **I-T-E CIRCUIT BREAKER CO.**

Plans to feature a metal enclosed automatic reclosing circuit breaker for the control and sectionalizing of d-c power in coal mines. A new multirange overcurrent protective relay will be incorporated in the display breaker which is designed to provide proper overcurrent protection for off-shift loads. A standard three-pole circuit breaker for use in switchgear in preparation plants will also be in the exhibit. *In charge—M. W. Pennybacker.*

• **JAEGER MACHINE CO.**

No description available.

• **JEFFREY MFG. CO.**

A complete line of modern equipment for trackless mining including units mounted on pneumatic tires and on crawlers will be displayed. Highlighting the exhibit will be a series of huge photographic enlargements of various phases of mining operations. Among the units available for inspection will be a tire-mounted Universal coal cutter, two types of loading machines, two types of shuttle cars, an Aerodyne mine fan assembly, an electric vibrating grizzly feeder, and a number of miscellaneous items. *In charge—J. H. Fulford.*

• **JOHNSON-MARCH CORP., THE**

Compound M, designed for effective dust control at the cutting face, the rotary dump, the loading machine, or the tipple, will be featured. *In charge—George A. Mau.*

• **JONES & LAUGHLIN STEEL CORP.**

The application of J & L Precisionbilt wire rope and special alloy steels, Jalloy and Otiscoloy, will be featured. An animated wire rope figure will point out cross-section views of various J & L wire rope constructions on a revolving reel head. Colored translite photographs will show the recommended application for each construction on power shovels, dragline, and other mining equipment. A contest to name the new wire rope manikin who will be prominent in the display is an added attraction. Short motion pictures on Jalloy and Otiscoloy steel will show mining industry applications. *In charge—D. J. Henecker and E. K. Waldschmidt.*

• **JOY MFG. CO.**

Two models of the Joy Continuous Miner—a high machine and a low machine—in operation will be the

feature of the exhibit. A timber setter, featuring a self-contained timber supply and a freely rotating boom, will be on display along with the new Joy rubber-tired mounted mine car compressor. A postpuller with a scraper blade for maintaining shuttle car roadways will be shown and the new 10-SC shuttle car will be introduced to the coal mining industry. "Silver Streak" cadmium-plated rock drills and a display of Sulmet tungsten-carbide cutter and auger drill bits will be available for examination. The SAC-91 stoper for roof pinning and a special hand-held drill for anthracite mines will be of special interest. *In charge—J. S. Morrow.*

• **KENNAMETAL INC.**

Mining machine bits, auger bits, drag and plug bits, finger bits, and solid head bits for strip mining, and rock bits for drilling medium and hard ground will comprise the presentation. Machine bits and auger bits will be featured in a coal face making up the background of the exhibit. *In charge—Richard L. Farris.*

• **KENSINGTON STEEL CO.**

A variety of products including a chain and renewable tooth sprockets made for use in preparation plants will be included in the display. Crawler treads, rollers, sprockets, dipper teeth, racks and pinions, and other parts made for shovel equipment plus crusher parts for preparation plants will be available for examination in front of a background of photographs. *In charge—E. C. Anderson.*

• **KOPPERS COMPANY, INC.**

A demonstration of fire-retardant wood and its application will be featured. A portion of the exhibit will be devoted to Ar-Moored ties, a combination of steel top and pressure-creosoted base. *In charge—R. W. Watson.*

• **LEE-NORSE CO.**

A rubber-tired mine service jeep and a mine jeep will be featured in the display of equipment designed especially for servicing coal mines. *In charge—E. M. Arentzen.*

• **LEROI CO.**

The Cleveland Division

Will exhibit a complete line of short leg stopers for roof bolting and pin timbering. For tunnel driving, the well-known Cleveland MDR Mine Jumbo with power feed drifters will be on display. A complete line of hand-held air tools for mine use likewise will be available for inspection.

• **LESCHEN & SONS ROPE CO., A.**

Will exhibit samples of "Hercules" (Red-Strand) wire rope designed for use on numerous types of coal mining equipment. These samples will be available for examination in both preformed and non-preformed types. Wire rope slings, including the recently developed flat-laced slings, will also be in the exhibit.

• **LETOURNEAU, INC., R. G.**

The giant 50-ton Tournahopper, a self-propelled coal hauler, will make its first public appearance. The E16 Tournarocker, a rear dump unit for coal or overburden hauling, will be shown along with the model C Tournadozer, a four-wheeled, rubber-tired, high-speed tractor-dozer. *In charge—Vernon E. Pray.*

• **LIMA-HAMILTON CORP.**

The Lima Shovel and Crane Division will display a small working model of the Lima Type 1201 shovel with remote control . . . will hoist, swing, crowd, and travel in front a series of large, colored photographs depicting Lima shovels, and draglines at work on stripping and loading coal. *In charge—E. E. Worrell.*

• **LINCOLN ENGINEERING CO.**

Plans a display of a complete line of lubricating equipment including hand guns, fittings, bucket pumps, air and electric barrel pumps, and centralized lubricating systems. Featured will be the Kleenseal surface check fitting with the ball-in-top. In the Centro-Matic centralized lubricating display, hydraulic pumping units will demonstrate actual operation. Electric drum pumps for use in lubricating mine car journals and for universal maintenance lubrication will be included in the exhibit. *In charge—Al Woodland.*

• **LINK-BELT SPEEDER CORP.**

Through continuous projection of a colored motion picture film, applications will be shown of shovel-cranes and draglines for coal stripping and mining operations. Colored enlargements of typical applications will supplement the motion picture.

• **LINK BELT CO.**

Will feature a sound movie on float-sink concentrator for Heavy Media coal cleaning. Operating units of the Link-Belt Multi-Louvre dryer and "CA" concentric-action vibrating screen will be displayed. An operating, wood-slat apron conveyor, to which power transmission and conveyor parts will be secured, will constitute a moving display of machinery parts. Also included in the exhibit will be a gearmotor with roller chain drive, the housing and chain casing of which have been made of plexiglass. A herringbone reducer driven through Electrofluid drive; a display of popular sizes of belt conveyor idlers; and a series of photographs illustrating various phases of coal handling equipment at the mine. *In charge—R. B. Barnes, L. O. Millard, and D. E. Davidson.*

• **LONG SUPER MINE CAR CO., INC.**

Two models of the "400 Series" Long chain conveyors showing the new "Gravity Takeup" headpiece, Superflite conveyor chain, and "Whispering Joint" alloy steel conveyor pans will be exhibited. *In charge—J. B. Long.*

• **McLANAHAN & STONE CORP.**

A Rockmaster crusher of the type designed for handling mine refuse or the type designed for crushing coal will be available for examination. *In charge—J. Craig McLanahan.*

• **McNALLY PITTSBURG MFG. CORP., THE**

A full size Gearmatic double roll crusher driven by a slow-speed motor will be on display. Another feature will be a half-scale model of the discharge finger-gate used in the McNally Norton washer. The background panel will display large illuminated pictures of important equipment. *In charge—T. R. Crawford.*

• **MACK TRUCKS, INC.**

Two heavy-duty truck models will highlight the exhibit. One of these is the LRSW, a six-wheeler of 30-tons capacity and the other is a Model LR tractor equipped with a 32- to 35-ton, bottom-dump coal trailer. Another operating unit of the Mack display will be the largest transmission in production, the TRDX 51, with parts exposed for ready observation of its action. *In charge—John Walker and M. C. Horine.*

• **McWHYTE COMPANY**

Samples of various sizes and constructions of wire rope used in coal mining for hoisting, mining machines and loaders, shovels, draglines, cranes, etc., will be shown in addition to Atlas braided wire rope slings used for maintenance work. *In charge—Forest J. Nelson.*

• **MARION POWER SHOVEL CO.**

The main feature of the exhibit will be a model of a

Marion walking dragline. Its operation will be demonstrated and the features of the unit may be inspected. *In charge—M. V. Cornell and Robert J. Lick.*

• MARTINDALE ELECTRIC CO., THE

Electric maintenance tools, instruments, and the Martindale protective dust mask will be included in the exhibit. Maintenance tools on display will comprise commutator grinding stones and grinding tools, mica undercutting saws, and other hand and motor-driven tools. Growlers, ammeters, volt meters, voltage tester, ohmmeter, circuit tester, and other electrical instruments will be available for examination. *In charge—Wm. N. Osbun, Jr.*

• MECHANIZATION, INC.

Facsimile copies of publications displayed by means of shadow boxes and flashlighting will draw attention to the editorial content and circulation. *In charge—Raymond Coombes.*

• MINERS' HARDWARE SUPPLY

Will demonstrate transition rails, compromise bars, skids, derailers, switch signals, and other items of track equipment. Interior mixer and extruder for producing clay tamping for stemming will be available for examination. Safety belts for pole climbers, car droppers, and shaft and headhouse repairmen will be included in the exhibit. *In charge—George C. Nelms.*

• MINE SAFETY APPLIANCES CO.

Among a great variety of products will be rock dust distributors featuring the new MSA FaceDuster, a light, portable high pressure unit especially adapted to conveyor mines. Another feature of the display will be the MSA mine communication system which allows direct communication between haulage locomotives and dispatchers. Other products to be shown include Edison electric cap lamps, protective hats, flame safety lamps, shotfiring units, and gas detection instruments. *In charge—C. M. Donahue.*

• MINES EQUIPMENT CO.

Will display a variety of products for use in coal mining operations including: low height permissible type and dust resistant safety circuit centers to serve drills, conveyors, and cutters; String-a-lite, sectionalized lengths of cord with molded in lights and connectors for temporary lighting installation; Neoprene cement for replacing or patching cable jackets with oil and flame resistant compounds; emergency belt controls for stopping belt conveyors; cable fault finders, to locate opens and shorts in conductors under cable jacket; and other electrical items. *In charge—R. G. Gehlsen.*

• MINING CONGRESS JOURNAL

Featured in the display will be the monthly publication of the American Mining Congress and the Coal Mine Modernization Year Book—fully illustrated record of the Annual Coal Conventions and Coal Shows with complete coverage of all papers presented at the technical sessions. An attractive lounge will provide a visiting place for welcome guests.

• MINING MACHINE PARTS, INC.

Representative replacement parts will be on display showing the improved design for underground coal mining equipment. The "Biggie" one-piece, alloy-steel guard rail will be displayed which combines splice bar and rerailer which may be rapidly attached. *In charge—W. P. Bigler.*

• MOBILE DRILLING, INC.

A jeep and tractor-mounted mobile prospecting drill will be on exhibition. These units designed for drilling holes of approximately 5 in. diam may be adapted to use larger bits for a variety of applications including prospecting, seismograph drilling, shallow well drilling, soil testing, blast hole drilling, etc.

• MOSEBACH ELECTRIC & SUPPLY CO.

Plans an exhibition of the latest developments in rail bonds, section insulator switches, feeder switches, resistance welding machines, trolley wheels, trolley wire splicers, trolley frogs, trolley taps and other electrical items. *In charge—John C. Loy.*

• MYERS-WHALEY CO.

A Whaley Automat loading machine in operation will be featured in the exhibit. Photographs of machines at work under various conditions will form a background for the operating equipment. *In charge—Charles C. Whaley.*

• NACHOD & UNITED STATES SIGNAL CO.

An operating model of automatic block signals and an exhibit of actual equipment for mine haulage, highway crossing signal model, trolley contactors, color light signals, and associated equipment for safe-guarding and expediting movement of electric locomotives over main line tracks will comprise the display. *In charge—Everett C. Brown.*

• NATIONAL ELECTRIC COIL CO.

The exhibit will feature a regular coil winding operator winding an involute loop mica-glass armature coil used in mining locomotive motors. In addition, a split type mine locomotive motor frame that has been converted to a one-piece type by welding and machining to engineered standards will be shown. *In charge—J. H. Chevalier.*

• NATIONAL MALLEABLE AND STEEL CASTINGS CO.

Willison automatic mine car couplers will be featured supplemented by other products used for construction of mine cars and for use with mining equipment, including wheels, dragline chain, plain and swivel hitchings, etc. Several assemblies of Willison automatic couplers will show their applications and adaptability. The self-centering feature of the coupler designs which permit the dumping of cars on rotary dumps will be illustrated. *In charge—Herbert H. Smith.*

• NATIONAL MINE SERVICE CO.

A completely new Wheat "Forty-Niner" electric cap lamp with its battery jar of Butalite plastic will be introduced. The line of Bomeco products including controllers, cable reels, intermediate gears, brush holders, and a variety of other items for the coal mining industry will be shown. Hayden belt fastening equipment will be demonstrated. The recently introduced lightweight model of the Koehler flame safety lamp will be displayed. *In charge—N. R. Chillingworth.*

• NATIONAL TUBE CO.

(See U. S. Steel Corp.)

• NOLAN CO., THE

Will exhibit the trip feeder retarder in a small size model which will demonstrate utilization of this unit both as a feeder and retarder. A model of a rotary car dumper ⅛ actual size will be demonstrated in operation. Rerailers, gear and wheel pullers, puller jacks, and small tools will also be shown. *In charge—C. L. Muntz.*

• NORTHWEST ENGINEERING CO.

Photographs of the company's shovels, cranes, and draglines will be shown, demonstrating their application in coal mining. *In charge—G. C. Williams.*

• **OHIO BRASS CO.**

Power handling materials of all types including a working model which will show the interlocking sequence control possible with O-B starters will be a part of the motor-starter exhibit. Features of the display will be a complete line of trolley overhead line and feeder materials for mainline haulage systems and air connecting couplers for use on mine cars where airbrakes are used. A Jones & Laughlin mine car designed for air braking will be shown with this newly designed coupler installed. *In charge—J. H. Sanford.*

• **OHIO CARBON CO., THE**

The exhibit will include a display of brushes used on motors for loaders, shuttle cars, locomotives, and other equipment in the coal mining field. Raw materials used in the manufacture of motor brushes will be shown and copies of brush survey books will be available. *In charge—F. C. Aurand.*

• **OIL WELL SUPPLY CO.**

(See U. S. Steel Corp.)

• **OKONITE CO., THE**

The Hazard Insulated Wire Works Division will exhibit all types of cable samples and enlarged photographs of mining installations to illustrate the wide range of cables for each specialized application in the mining field. A model of the Bureau of Mines flame test will be featured showing how routine measurements are made of the increased flame-resistance of Hazaprene ZBF sheaths. Also available for inspection will be Okonite splicing tapes. *In charge—T. R. Wiechel.*

• **OLIVER CORP., THE**

The exhibit will feature the latest model FDE Oliver-Cletrac tractor equipped with the new Heil cable-operated bulldozer. Included in the display will be the model DDH Oliver-Cletrac equipped with a new Drott Hi-Lift loader. This tractor is equipped with a 68-hp full Diesel engine, electric starting, and special 16-in. tracks. A model HG Oliver-Cletrac equipped with a new Imp dozer will also be available for inspection. Appropriate displays of industrial wheel tractors and illustrations of other industrial equipment manufactured by the company will form a background for the display. *In charge—H. W. Davis.*

• **OLIVER IRON & STEEL CORP.**

A display board will show various styles and types of industrial fasteners. Speciality items in bolts, nuts, studs, cap screws, pins, and rivets used on mechanical equipment employed by the coal mining industry will be available for examination. *In charge—Carl Wingerson.*

• **OSMOSE WOOD PRESERVING CO.**

Plant models and specimens of Osmose-treated timber after many years service life underground will be shown. Technical data on the Osmose process, engineering data on plant layouts, and costs will be available. A photographic file on mine roof support will be shown. *In charge—Joseph M. Bray.*

• **OWENS-CORNING FIBERGLAS CORP.**

Insulating and winding of d-c armatures, used in Fiberglas electrical materials, will be demonstrated. An armature winder from the winding department of one of the leading motor manufacurers will show how the Fiberglas insulation is used in building actual electrical equipment. An array of glass insulated motors used in mining equipment will be shown against a background of photographs of the mining units which these motors power. A sound-color film, "Watts In Glass," will run continuously to show the use of Fiberglas insulation material in both new and rewound equipment. *In charge—M. P. Claytor.*

• **PAGE ENGINEERING CO.**

Operation of a 3-cu yd automatic dragline bucket will be demonstrated by a model which illustrates how this unit secures full loads in minimum time. A Kodachrome motion picture will show the unit in action at various coal mines. *In charge—Robert W. Baker.*

• **PARIS MFG. CO.**

Plans to exhibit new models of both horizontal and vertical drills plus a self-propelled coal drill designed for one man operation. *In charge—G. E. Hoffman and A. V. Bonsey.*

• **PENN MACHINE CO.**

Plans to display a super-weld rail bond, including the Everlast and other super-weld types; improved gears and pinions of modern design; and various other replacements for the newest types of mining equipment.

• **PENNSYLVANIA STATE COLLEGE, SCHOOL OF MINERAL INDUSTRIES**

Pictorial matter describing the work of the school in resident instruction, extension services, and research will be shown. Mechanized mining research will be featured and a new illustrated bulletin, "More Profit In Mechanical Mining" will be on display. Included in the exhibit will be utilization research activities consisting of pictorial and bulletin material pertaining to stokers, carbonization, gasification, and non-fuel uses of coal. Maps, charts, textbooks, and lesson material used in mining classes will be on display by the extension services. *In charge—A. W. Bitner.*

• **PITTSBURGH GEAR CO.**

A number of standard coal mining replacement parts designed to reduce maintenance cost will be on display. The exhibit will include the taper serrated shaft and pinion which eliminates standard keyways and a cut open section of gearing showing the new armored type gear. *In charge—Eddie R. Phillips.*

• **POST-GLOVER ELECTRIC CO.**

Will display steel grid resistors, heaters, welders, and automatic switches. *In charge—R. W. Houp.*

• **PRECISION CHAIN CO.**

Will exhibit the new 4th series precision cutter chain which use the Rockbuster-Multiple heavy bits. In addition to this rivetless chain, the new Rockbuster-Diamond bits with adaptor clips will be displayed. *In charge—Frank L. Fulke.*

• **PRODUCTIVE EQUIPMENT CORP.**

Plans to exhibit a 4 by 10-ft, two-deck, suspended-type Gyroset screen, designed to provide a stroke varying between 0 and ⅜ in. by means of two adjustable bearing eccentrics. *In charge—L. H. Lehman.*

• **PROX COMPANY, INC., FRANK**

Will display the new Prox Duomatic cutting chains, Prox Duo bit, and cutter bars and drive sprockets for all types of cutting machines. *In charge—Charles J. Forbes.*

• **PURE OIL CO., THE**

A variety of petroleum products applicable to coal mining will be shown. Extreme pressure gear lubricants will be demonstrated. *In charge—E. S. Miller and R. C. Osborne.*

• **QUAKER RUBBER CORP.**

Will feature a complete display of products used by the coal mining industry including conveyor and transmission belting, V-Belts, mine suction and discharge hose, fire hose, rod and sheet packings, and mine trolley guard rubber. *In charge—Elmer Asbridge.*

• **RAYBESTOS-MANHATTAN, INC.**

Plans to exhibit a full size mining machine in operation and equipped with conveyor belts showing several methods of proper use and types of belt fasteners, and new types of conveyor belting. Industrial rubber products particularly applicable to mining and related industries, covering belting and hose of various types, also an exhibit of packings and friction material used in mining equipment will be available for inspection. *In charge—P. L. Edwards.*

• **REICH BROS. MFG. CO.**

An improved model of the float and sink testing machine known as the Delatester will be featured and information will be available on a recently developed line of hydraulic rotary prospecting drills. *In charge—Wendell L. Reich.*

• **RELIANCE ELECTRIC & ENGINEERING CO., THE**

Outstanding item of the display will be a-c motors for above-ground use showing the wide range of applications of these motors to modern mining equipment. A special section will be devoted to renewal parts including an array of the new Reli-X hot pressed coils. Reliance d-c motors for underground application will also be shown together with the new explosion-proof, corrosion resisting motor and a new line of gearmotors. *In charge—Charles E. Hugus, Jr.*

• **ROBERTS AND SCHAEFER CO.**

Will exhibit full-sized Super-Airflow coal cleaning units for cleaning nut and pea coals, fine coal ⅜ in. by 0 and 10 mesh by 0. An operating oil flotation unit to clean minus 65 mesh coal will be included in the display. *In charge—R. T. Middleton.*

• **ROBERTSON CO., H. H.**

A variety of products for use in constructing mine plants will be exhibited. These include Galbestos, a protected metal for roofs and sidewalls of industrial structures; Q-Panels, metal insulated sidewall panels for industrial and commercial application; ventilators; and Sheetlites, a unit designed to provide even daylighting. *In charge—R. A. Finlayson.*

• **ROBINS CONVEYOR DIV.**
Hewitt-Robins Incorporated

The Robins Conveyors Division display will include a condensed mine conveyor consisting of one of each type of section used in assembling Hewitt-Robins mine conveyors which have been installed in lengths up to 5000 and 6000 ft. A Robins Eliptex dewaterizer will be in operation along with a Robins Vibrex screen. *In charge—R. U. Jackson.*

• **ROEBLING'S SONS CO., JOHN A.**

A series of translite photographs will show the application of wire rope in coal mining operations. *In charge—F. J. Maple.*

• **ROME CABLE CORP.**

Portable mining cables will be featured with interest focused on the serviceability of the parallel duplex type of trailing cable with Neoprene sheath and ground wire construction. A series of safety posters aimed at better handling of electrical cables will be offered free of charge. *In charge—R. A. Gray.*

• **SAFETY FIRST SUPPLY CO.**

A broad variety of the equipment produced for use by the coal mining industry will be displayed including self-contained breathing apparatus; new resuscitator, inhalator and aspirator to revive one, two, or three patients at the same time; new plastic safety hat; new air line respirator; plastic goggles; safety belts; and Unox penetrant. *In charge—R. A. Phillips.*

• **SALEM TOOL CO., THE**

The McCarthy coal drills will be featured in the exhibit along with the McCarthy vertical drill used for drilling vertical 6 to 8 in. diam holes in overburdens of 30 to 100 ft in depth. Also on display will be a self-propelled horizontal drill used in drilling overburden.

• **SANFORD-DAY IRON WORKS, INC.**

Included in the exhibit will be an automatic drop-bottom mine car and ball bearing wheels produced by the company.

• **SIMPLEX WIRE & CABLE CO.**

Plans to display an array of insulated wires and cables suitable for use in mining operations. The entire field of insulated wire for mining use will be covered from cables designed for providing power to the mine through bore holes down to shot fire cord. *In charge—E. J. MacKenzie.*

• **SIMPLICITY ENGINEERING CO.**

Operating equipment on display will include an Os-A-Veyor and one 4 by 12-ft, model "D," double-deck Simplicity gyrating screen. Rubber balls mounted inside of the compartments will demonstrate the action of the unit in preventing damp coal from building up and slab coal from wedging in. *In charge—J. C. Powlison.*

• **SKF INDUSTRIES, INC.**

A complete line of anti-friction bearing and pillow blocks designed for the coal mining industry will be exhibited. The display will highlight unit, split, and heavy-duty pillow blocks. *In charge—R. H. DeMott.*

• **SOCONY-VACUUM OIL CO.**

No description available.

• **SOLVAY SALES DIVISION, ALLIED CHEMICAL & DYE CORP.**

A comfortable lounge will furnish a meeting place for coal mining men attending the 1949 Coal Show.

• **STANDARD OIL CO. (INDIANA)**

The new line of Superla mine loader lubricants will be featured. These lubricants, for all types of loaders and cutters, have undergone two years of testing under severe conditions in mining operations. A heavy-duty cam and gear lubricant for use on walking draglines will also be shown.

• **STANDARD OIL CO. (OHIO)**

Oils and greases used by the coal mining industry will be exhibited and representatives will be on hand to answer engineering problems in the lubrication field. *In charge—M. R. Bower.*

• **STAR JACK CO.**

A number of jacks including the Star aluminum M.S.P. (Mine Safety Post) and M.R.T. (Mine Roof Timber) jacks will be on display in such manner as to show their use in mining operations. *In charge—F. J. Jakoubek.*

• **STERLING STEEL CASTING CO.**

Two wheels mounted on miniature mine cars will show the difference between a balance mine car wheel and one of conventional design. Several different types of Sterling cast steel balance design wheels will also be shown as well as new types of seals for stub axles and miscellaneous cast steel castings. *In charge—F. E. Rhine.*

• **STEWART-WARNER CORP.**

Centralized lubrication equipment and related automatic controls and various equipment used for the handling and transfer of lubricants will make up the display. *In charge—E. R. Harris.*

• **STREETER-AMET CO.**

Featured in the exhibit will be the MT-14 recorder and automatic weighing machine extensively used by the coal industry for weighing mine cars in motion. *In charge—V. C. Kennedy, Sr.*

• **SUNNYHILL COAL CO.**

A feature of the exhibit will be the "COLMOL" continuous mining machine which utilizes a rotary principle for mining and conveys the coal from the face to auxiliary transportation equipment trailing the machine. A section of the exhibit will display motion pictures of the "COLMOL" during construction, and operating in various seams of coal and the method of changing or replacing bits in the cutting arms of the machine will be demonstrated. *In charge—W. J. Phillips.*

• **SYNTRON CO.**

Model units of grizzly feeders, picking tables, sizing screens, and spiral elevators in operation will be on display. Featured will be the "Package-Unit" for coal preparation designed to meet the particular demand of the smaller operator. *In charge—George L. Chedsey.*

• **TALCOTT, INC., W. O. & M. W.**

The complete line of conveyor belt fasteners along with Acme steel patch fasteners will be exhibited. A mural illustrating a conveyor system with the actual piece of rubber conveyor belting spliced with Talcott conveyor belt fasteners will form a background for the booth. *In charge—M. W. Talcott.*

• **TAMPING BAG CO., THE**

Wet-Strength tamping bags made of specially treated Wet-Strength Kraft paper will be featured. *In charge—Alfred E. Pickard.*

• **TEMPLETON, KENLY & CO.**

Will exhibit pin-up type roof jacks as well as standard pipe-screw type roof jacks and rachet lever automatic lowering mine timber jack and post puller. Simplex ratchet lowering jacks designed for thin, average, and thick coal seam operations will occupy important section of the exhibit along with the complete line of Simplex hydraulic jacks. *In charge—J. B. Templeton.*

• **TENNESSEE COAL, IRON & R.R. CO.**

(See U. S. Steel Corp.)

• **TEXAS CO., THE**

Will feature petroleum products consisting of oils and greases used by the coal mining industry. Two grease demonstrating machines will show the action of greases, and a grease breakdown machine will show a grease-lubricated bearing running at high speed. A stroboscopic light will show the action of the grease as if the high speed bearing were not moving. *In charge—Frank M. Pobst.*

• **THERMOID CO.**

In a four section display several samples of Thermoid products with various grades of conveyor belting, industrial hose, brake linings and clutch facings, flat transmission belts, and V-belts will be shown. Large rolls of conveyor belting of types used in the mining industries will be featured. *In charge—A. F. Matheis.*

• **TIDE WATER ASSOCIATED OIL CO.**

Will display samples of the proper lubricants to be employed in the various phases of operation in the coal mining field. *In charge—F. C. Lempert.*

• **TIMKEN ROLLER BEARING CO., THE**

A representative assortment of Timken bearings and parts used in connection with the application of Timken bearings to mine cars and mining machinery will comprise the exhibit. Cutaway models of various units such as mine car wheels, conveyor idlers, return idlers, and other types of equipment used in mining and transporting coal will also be available for examination. *In charge—J. W. Weir.*

• **TOOL STEEL GEAR AND PINION CO., THE**

Translite photographs of various coal mining machinery and parts manufactured will be displayed. Actual cutaway parts will show the materials furnished and their special application to coal mining. The mystery gear which continues to revolve with no apparent means of locomotion will be the center of the display. *In charge—C. R. Burrell.*

• **TRABON ENGINEERING CORP.**

Small fully automatic lubricating systems adaptable to crushers, shaker screens, dewatering screens, and other equipment requiring almost constant lubrication will be in operation. Equipment will be shown adaptable to conveyors and other equipment requiring lubrication at more infrequent intervals. Various accessories such as hydraulic hose, tubing, tube fittings, swivel connections, and other accessories used to make up complete lubricating systems will make up a portion of the exhibit.

• **TRACY CO., BERTRAND P.**

An attractive lounge will be a comfortable meeting place for company representatives and coal mining men attending the 1949 Coal Show. *In charge—D. M. Hildebrand.*

• **TRUCK ENGINEERING CORP.**

Plans to display a tandem axle dump unit for highway haulage of coal. The exhibited unit will be of 20½-cu yd capacity for hauling 16 to 18 tons of coal.

• **TYLER CO., W. S.**

A feature of the exhibit will be a large Ty-Rock (vibrating) screen of the type used in the coal industry. A Ro-Tap testing sieve shaker and Tyler standard screen scale testing sieves along with a large selection of woven wire screens will round out the exhibit. *In charge— H. F. Lawrence.*

• **UNION WIRE ROPE CORP.**

Transparencies of wire rope ends and panels showing "Tuffy" slings, "Tuffy" draglines, "Tuffy" mining machine ropes, and general coal operating ropes will make up the exhibit. *In charge—Ray G. Noble.*

• **UNITED ENGINEERS & CONSTRUCTORS, INC.**

(See Fairmont Machinery Co.)

• **UNITED STATES RUBBER CO.**

The Electrical Wire and Cable Department plans to

exhibit its Royal Gold (Yellow Jacket) trailing cable which will be shown in conjunction with a display of products of the Mechanical Goods Division which will feature Ustex nylon conveyor belt. *In charge—R. N. Hanes and R. B. Carland.*

• **UNITED STATES STEEL CO.**

Cooperating in the display are the American Bridge Co., American Steel & Wire Co., Carnegie-Illinois Steel Corp., Columbia Steel Co., Cyclone Fence Division of American Steel & Wire Co., National Tube Co., Tennessee Coal, Iron & Railroad Co., and United States Steel Supply Co. A complete display of steel and steel products as used in the mining industry will be available for examination. A working demonstration on the application of American Tigerweld rail bonds; a display of American Tiger Brand wire rope; and a complete display of electrical wiring cable which will be featured by American Steel & Wire Co. Some unusual samples of Cyclone Fence conveyor belting will be shown which are applicable to the mining industry. There will be three full-size sections of stainless steel coal screen. One of these will be taken out of service to show the effect of wear and corrosion. The application of Cor-Ten steel to mine car construction will be demonstrated.

• **UNITED STATES STEEL EXPORT CO.**

(See U. S. Steel Corp.)

• **UNITED STATES STEEL SUPPLY CO.**

(See U. S. Steel Corp.)

• **UNIVERSAL ATLAS CEMENT CO.**

(See U. S. Steel Corp.)

• **UPSON-WALTON CO.**

Will have a display of brattice cloth and wire rope produced for coal mining use.

• **VICTAULIC COMPANY OF AMERICA**

A complete line of Victaulic pipe couplings, ranging from ¾ in. to 60 in. diam, modern full-flow elbows, tees, reducers, etc., and Vic-Groovers ranging in size from ¾ in. through 4 in. for the installation and operation of all types of pipe systems for mine and preparation plants will be available for examination. *In charge—R. W. English and Frank Costanzo.*

• **VIKING MACHINERY SALES CORP.**

Plans to display a model of a piece of equipment for the Viking hot vapor oil process and will feature proper hooding for the most economical and efficient application of the oil. Parts required for controlling the oil will be included in the display. *In charge—C. E. Berry and Henry O. Erb.*

Information seekers at the 1947 Exposition

• **WATT CAR & WHEEL CO., THE**

Plans to show an all steel mine car of 260-cu ft capacity, equipped with four wheels of the spring-suspended type and Ohio Brass couplers. Also in the display will be the Watt bolster-type truck for use on eight wheel cars. *In charge—R. L. Edgar.*

• **WEDGE BAR SCREEN CORP.**

Industrial screens for mining covering types made from plain steel, high carbon, and stainless steel will be exhibited.

• **WEDGE WIRE CORP.**

Will exhibit Wedge Wire screens in different metals and opening sizes. The life and construction of Wedge Wire screens for Carpenter dryers will be the main feature of the exhibit which will also show the construction and installation of aluminum screen in vibrators. *In charge—W. E. Bixby.*

• **WESTERN CARTRIDGE CO.**

Division of Olin Industries, Inc.

A complete line of blasting caps and dynamites manufactured and sold by the organization will be available for examination. A series of translite photographs will depict the various properties and construction features of the new Minimax ventless delay caps. Also on display will be a series of the dynamites manufactured by the Liberty Powder Co., Egyptian Powder Co., and Equitable Powder Co. *In charge—A. J. Barocca.*

• **WESTERN MACHINERY CO.**

A Wemco model Heavy-Media separation circuit in operation simulating the cleaning of coal will be the main feature of the exhibit. The separatory cone of this unit is of clear plastic for clear examination of the operation of the unit. The "Win-A-Prize" game which challenges operators' knowledge of different mining plants throughout the United States, which have been designed and/or constructed by Western Knapp Engineering Co. division of Western Machinery, will be a major attraction of the exhibit. *In charge—R. W. Hernlund.*

• **WESTINGHOUSE ELECTRIC CORP.**

A low line locomotive operating on eccentric test blocks will show the spring action of the mounting. A portable Ignitron rectifier substation, motor generator sets, and a complete line of other motors will be shown. The Beltroller, a limiting device for controlling the speed of conveyors, together with a safety switch system designed to permit stopping a belt from a series of points along the conveyor line, gear motors, speed reducers, locomotives, shovel gears, renewal parts, line material, transformers, motor starters, packing glands, instruments, and lighting gear will be included in the display.

• **WEST VIRGINIA STEEL AND MFG. CO.**

Samples of rails and miscellaneous products used by the coal mining industry will be featured. A full-sized room turnout as used in modern coal mines will be a portion of the display and will demonstrate the application of prefabricated track of heavy duty design. Rerailers, that have now been incorporated as a standard part of these steel turnouts, will be particularly featured. *In charge—J. B. Haskell.*

• **WICKWIRE SPENCER STEEL DIVISION**

Colorado Fuel & Iron Corp.

Wickwire rope will be featured in the display consisting of an animated model of a mine hoist house surrounded by samples of Wickwire rope. *In charge—A. S. Rairden.*

Blasting Raise Rounds With Millisecond Delays

By WING G. AGNEW
Chief, Mount Weather Branch
Mining Division, U. S. Bureau of Mines
Bluemont, Va.

EXPERIMENTS WITH various types of raise rounds are being conducted at the Mount Weather Testing Adit of the Mining Division, U. S. Bureau of Mines, while driving a 6- by 10-ft ventilation raise. The distance from the adit rail to the surface is 233 ft, so there will be adequate opportunity to test numerous ideas and theories. However, as the time required for this project will cover several months, it is thought advisable to inform the mining profession of some of the surprising results obtained from the first five rounds blasted with millisecond delays.

Of the five rounds blasted to date, two have been in massive epidosite, and three have been in chloritic greenstone. The ground is exceptionally hard and tight, with no faults or fissures to aid the break. What little schistosity there is in the greenstone lies in a plane normal to the drill holes.

All of the rounds were designed to pull 5 ft, and the quantity of powder used per round was kept constant, namely, 128 cartridges of 1½ by 8-in., 60-percent ammonia gelatin dynamite (approximately two boxes), and each hole contained two cartridges of dry sand stemming tamped in with a small wad of paper to hold it in place. Incidentally, in loading each hole one stick of dynamite was shoved up ahead of the primer to have a longer section of leg wire extending from the hole. The first four rounds were drilled with 32 holes each, and the first three rounds were drilled identical, so the only variation in those rounds was the rock and the distribution of the delay caps (See Fig. 1).

The millisecond delay caps used were O, A, and B, in which the time interval between the O delay and A delay was 28-30 milliseconds, and between the O delay and B delay was 75-78 milliseconds. Other delay caps used in rounds one and two were standard individual delays. All leg wires were connected in series and detonated with a 50-cap-capacity, hand-operated blasting machine.

Round one drilled off the raise station, was entirely in epidosite which contained some jasper and ordinarily breaks very fine when sufficient dynamite is used. However there were some large chunks produced in this round. Perhaps it was because it was the first round and there was some slabbing action at the edges, but the round broke clean without bootlegs. The loading and distribution of the delays is shown in Fig 1.

Round two, as previously stated, was drilled identical with round one; and the loading was also the same, except for the distribution of the delays (See Fig. 2). This round was in epidosite and broke clean without bootlegs. The muck produced was somewhat finer than in round one,

Experimental raise rounds pulled while driving a 6 by 10-ft ventilation raise have provided some interesting results. Although the data indicate that short delay primers may permit pulling raise rounds with fewer holes and without any cut holes, further tests are being conducted.

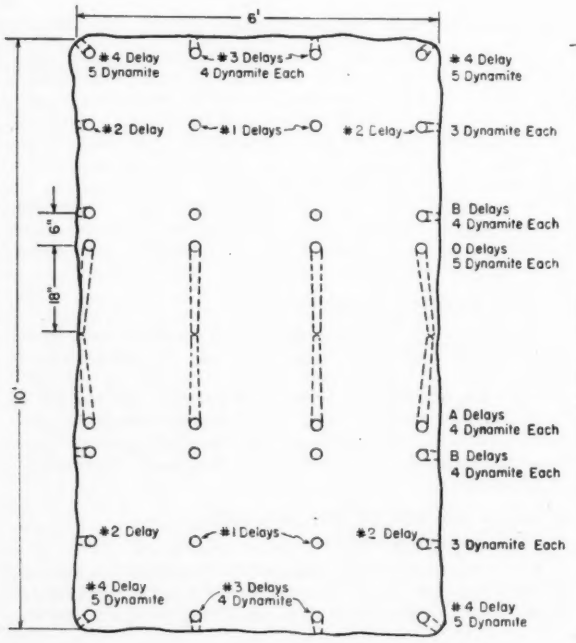


Figure 1— Raise Round 1, 32 Holes, 128 Cartridges Dynamite, 2 Cartridges Sand Stemming Per Hole.

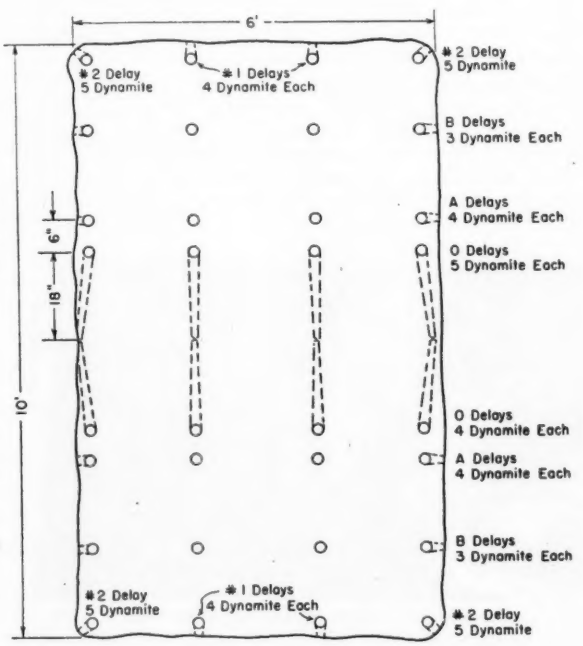


Figure 2— Raise Round 2, 32 Holes, 128 Cartridges Dynamite, 2 Cartridges Sand Stemming Per Hole.

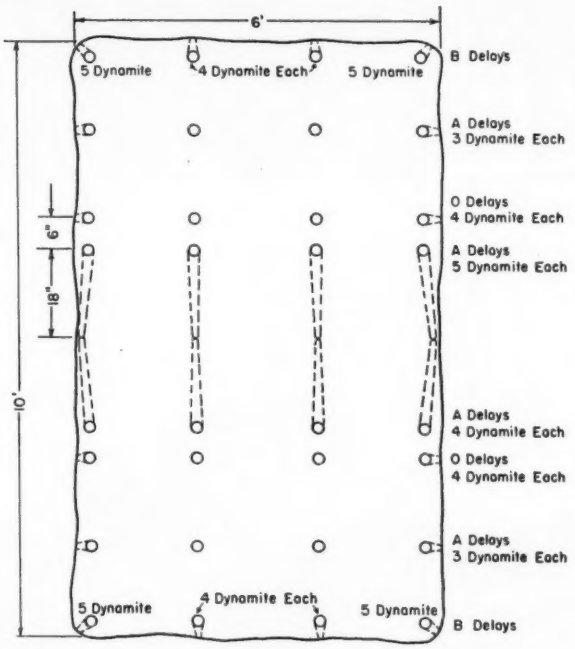


Figure 3 - Raise Round 3, 32 Holes, 128 Cartridges Dynamite, 2 Cartridges Sand Stemming Per Hole.

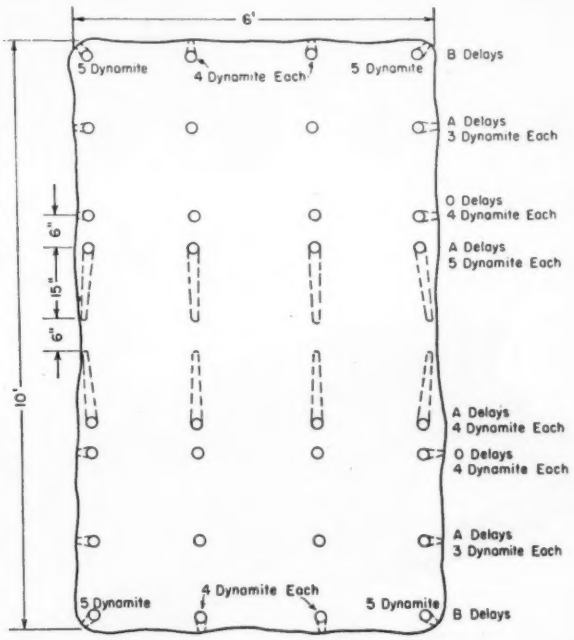


Figure 4 - Raise Round 4, 32 Holes, 128 Cartridges Dynamite, 2 Cartridges Sand Stemming Per Hole.

but there were a few rather large chunks.

Round three was drilled exactly like the previous two rounds but was entirely in tough-breaking chloritic greenstone, which normally breaks in slabby chunks. The distribution of the delays for this round was unorthodox but, to everybody's amazement, the round broke clean without bootlegs—in fact, with few pieces of rock larger than a man's fist.

Round four was drilled with the cut holes bottomed approximately 6 in. apart (See Fig. 4). This round was also entirely in chloritic greenstone identical with that encountered in the previous round, and the loading and the distribution of delays were the same as in round three. From visual inspection, this round broke identical with the previous round and produced the same fine-size muck.

Round four was drilled with the cut-greenstone encountered in the two previous rounds. This round consisted of 28 holes, without any cut holes. (See Fig. 5). As the quantity of dynamite used was the same as in each of the previous rounds, the distribution of the dynamite and the delays had to be different, as shown in the figure. The round broke clean, except with eight 3 to 4-in. bootlegs in one end of the raise, and the muck was almost as fine as that produced in the previous two rounds. The bootlegs appear to have been due to the fact that the rock broke to a flat slip plane at that end of the raise instead of to the bottom of the holes as in other parts of the raise.

The five rounds produced 26 ft of raise, and most of the 1 ft of overbreak occurred in rounds three and four that were blasted with only three different delays (O, A, and B) and in which the cut holes were blasted with a later delay than the first rows of what are normally slabbing holes.

The results obtained from round five indicate that raise rounds may not require cut holes when blasted with millisecond delays distributed as shown (see Figs. 3, 4, and 5). In all cases, such a procedure would reduce the number of holes required for a round; in this instance, the reduction was four 5½-ft holes. The concussion appears to be less when millisecond delays are used, and the muck produced is much finer and consequently, the chance of damaging the raise timbers is greatly reduced.

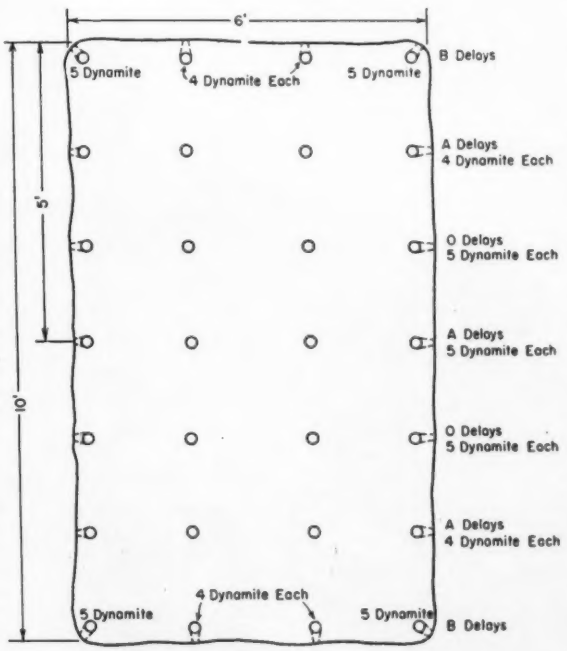
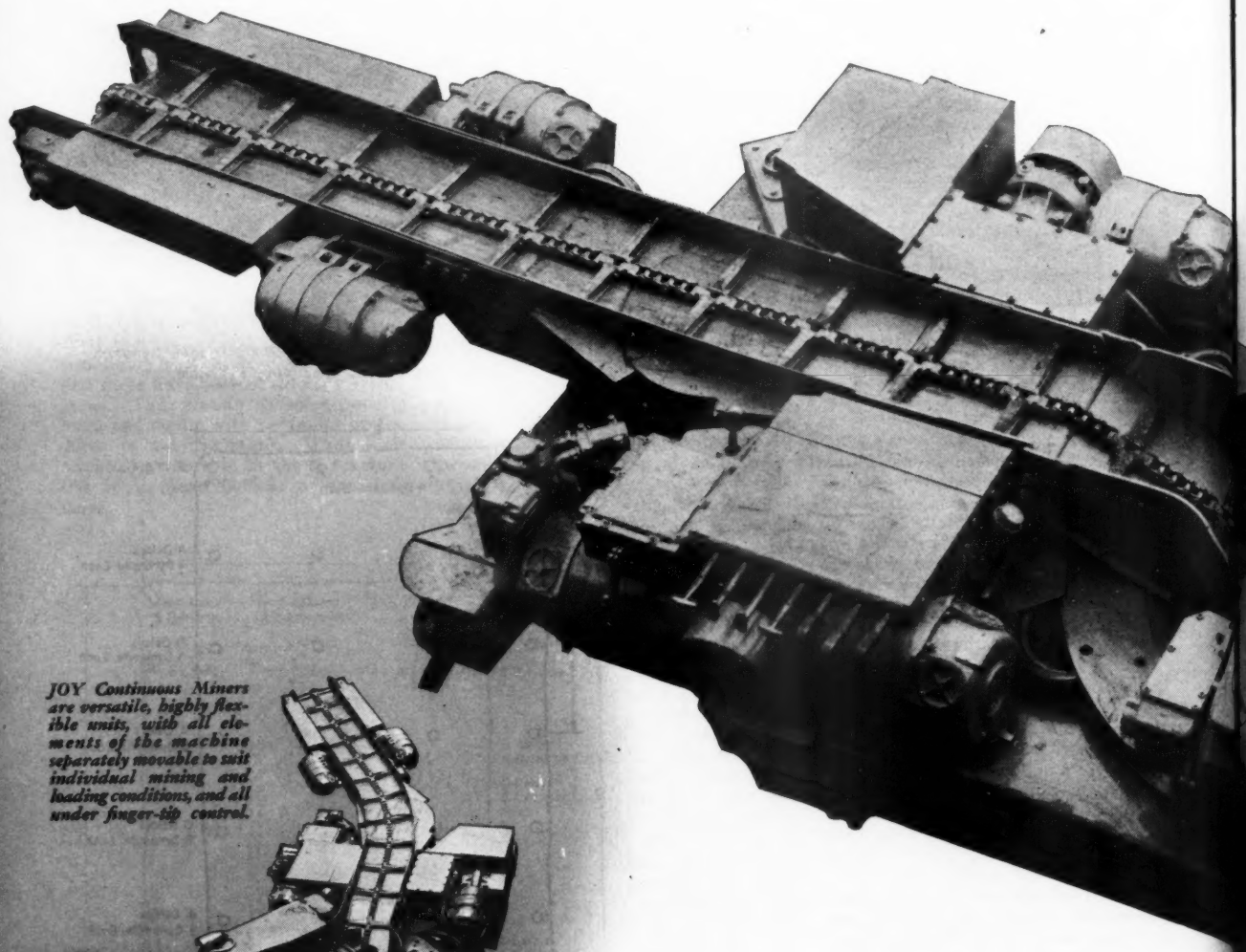


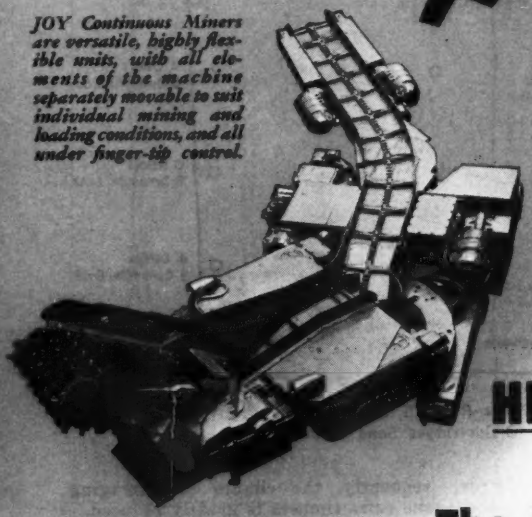
Figure 5 - Raise-Round 5, 28 Holes, 128 Cartridges Dynamite, 2 Cartridges Sand Stemming Per Hole.

Further experiments along the same lines will be conducted, and interesting results will be reported as obtained.

The JOY "JCM"



JOY Continuous Miners are versatile, highly flexible units, with all elements of the machine separately movable to suit individual mining and loading conditions, and all under finger-tip control.



HIGH and LOW COAL Types

The JOY CONTINUOUS MINER

will be shown operating at the COAL SHOW.

CONTINUOUS MINER

LATEST and GREATEST DEVELOPMENT

in Modern Mechanized Mining

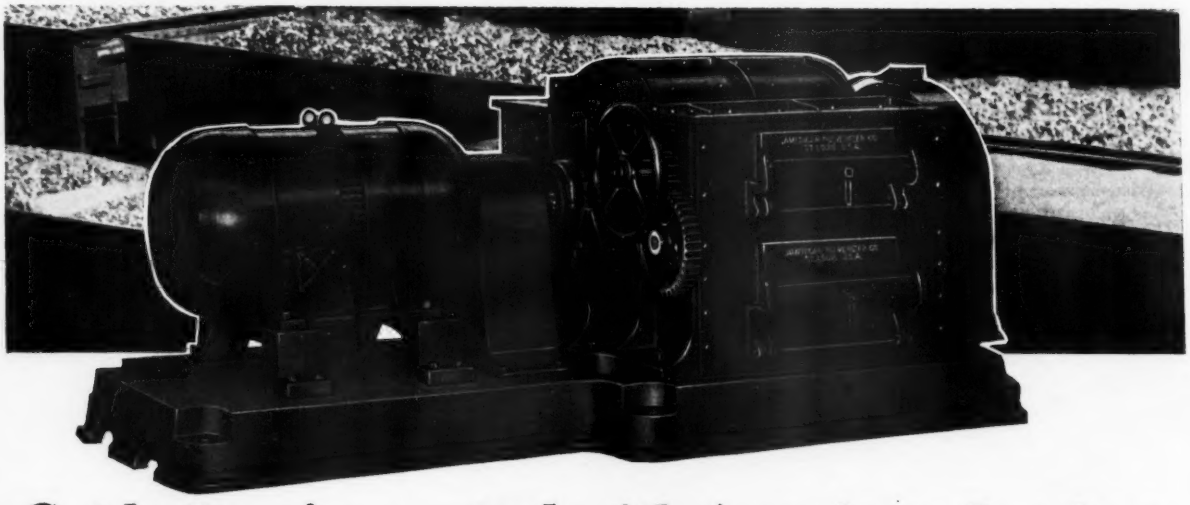
Consult a Joy Engineer

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

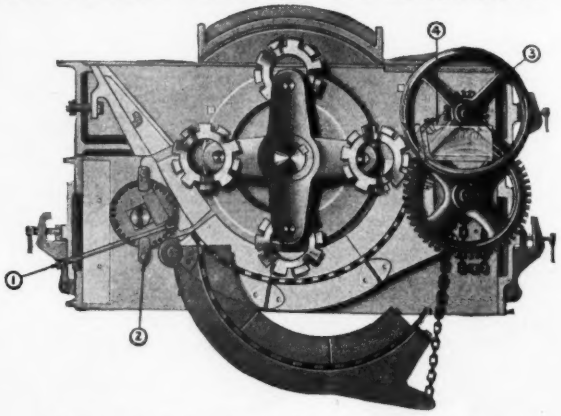
PRODUCTION *GOING STRONG* but MARKETING GOING WRONG?



Get better size control with American Crushers

When tonnage gains below ground are offset by improper ratios of unwanted, fines and unbalanced screen rejects, it's time to survey and revise your coal crushing operation.

American Rolling Ring Crushers assure better size control with their exclusive, patented, shredder ring action. Reduction is readily controlled to obtain highly marketable or pulverizer sizes with minimum of carbon dust and with no oversize.



Only Americans have the shredder rings each with 20 cutting edges that split coal instead of crushing it. Revolving freely on its own shaft, each ring deflects from tramp iron, etc., which is propelled to metal trap.

Send for special "AC Coal Crushing Bulletin"—yours for the asking.

American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

1019 MACKLIND AVE.
ST. LOUIS 10, MO.

NATIONAL MINE SERVICE COMPANY

Presents

. . . The Completely New and Advanced

WHEAT "FORTY-NINER" ELECTRIC CAP LAMP

With colorful "high-visibility yellow" battery jars of incredibly impact-resistant Butalite plastic—the first industrial use of this amazingly strong and durable material.

With 25 per cent greater light output yet no increase in battery size, made possible by increased capacity in the ingeniously designed, space-saving, flat-sided positive tubes.

With simple and positive mechanism for adjusting the focus of the light beam to a perfect spot in the lamphouse or underground.

With stainless steel battery jar top, smoothly contoured for maximum wear.

Plus **all these time-proved Wheat features:**

• Constant, steady, dependable light throughout the *entire* working shift • "Ironclad" batteries • Actual self-service—fully automatic charging • Appreciable savings in lamp maintenance • No burns from electrolyte.

You Are Invited To Make Our Booth—No. 300 in the Arcade—Your Mining Congress Headquarters

Wheat "Forty-Niner" Electric Cap Lamps, Koehler National Flame Safety Lamps, Genuine Joy Replacement Parts, Hayden Belt Fastening Equipment, Famous Bemeco Products —Locolite Sealed Beam Headlights, Cable Reels with Intermediate Gears, Locomotive Controllers, Cable Guides, Journal Boxes, Axle and Journal Liners.

Wheat Electric Cap Lamps are sold, installed and serviced exclusively by

National Mine Service Company

Has the facilities . . . Delivers the goods

BEMECO DIVISION	ALL-STATE DIVISION	WHITEMAN DIVISION	KY.-VA. DIVISION	ANTHRACITE DIVISION	WESTERN KY. DIVISION
Beckley, W. Va.	Logan, W. Va.	Indiana, Pa.	Jenkins, Ky.	Forty Fort, Pa.	Madisonville, Ky.

NO CABLE LIKE IT!

SECURITYFLEX

PARALLEL MINE CABLE

with BREAKER-STRIP*

SECURITYFLEX *Safety Firsts*

- *First* to comply with U.S. Bureau of Mines Flame Test and Pennsylvania Flame Test. (Insist on mark of *full compliance*—P-102-BM—at 12′ intervals.)
- *First* neoprene treated Glass Cord Reinforcing—stops wicking of moisture, conducting of stray currents, increases strength.
- *First* and *only* Anti-Short Breaker Strip* construction—cuts short circuits between conductors.
- *First* parallel mine cable with ground wire.
- *First* and *only* D-Shaped* insulation—prevents overriding of conductors.
- *First* to have insulation and outer jacket bonded together—to form a *solid block* around conductors.
- *First* with smaller diameters that pack more on a reel, ease handling.

*Reg. U. S. Pat. Off.

THE PATENTED anti-short breaker-strip construction of Securityflex Parallel Mine Cable is an exclusive development of Anaconda Wire & Cable Company. No other mine cable gives you this protection against shorts between conductors, even under the heaviest impact.

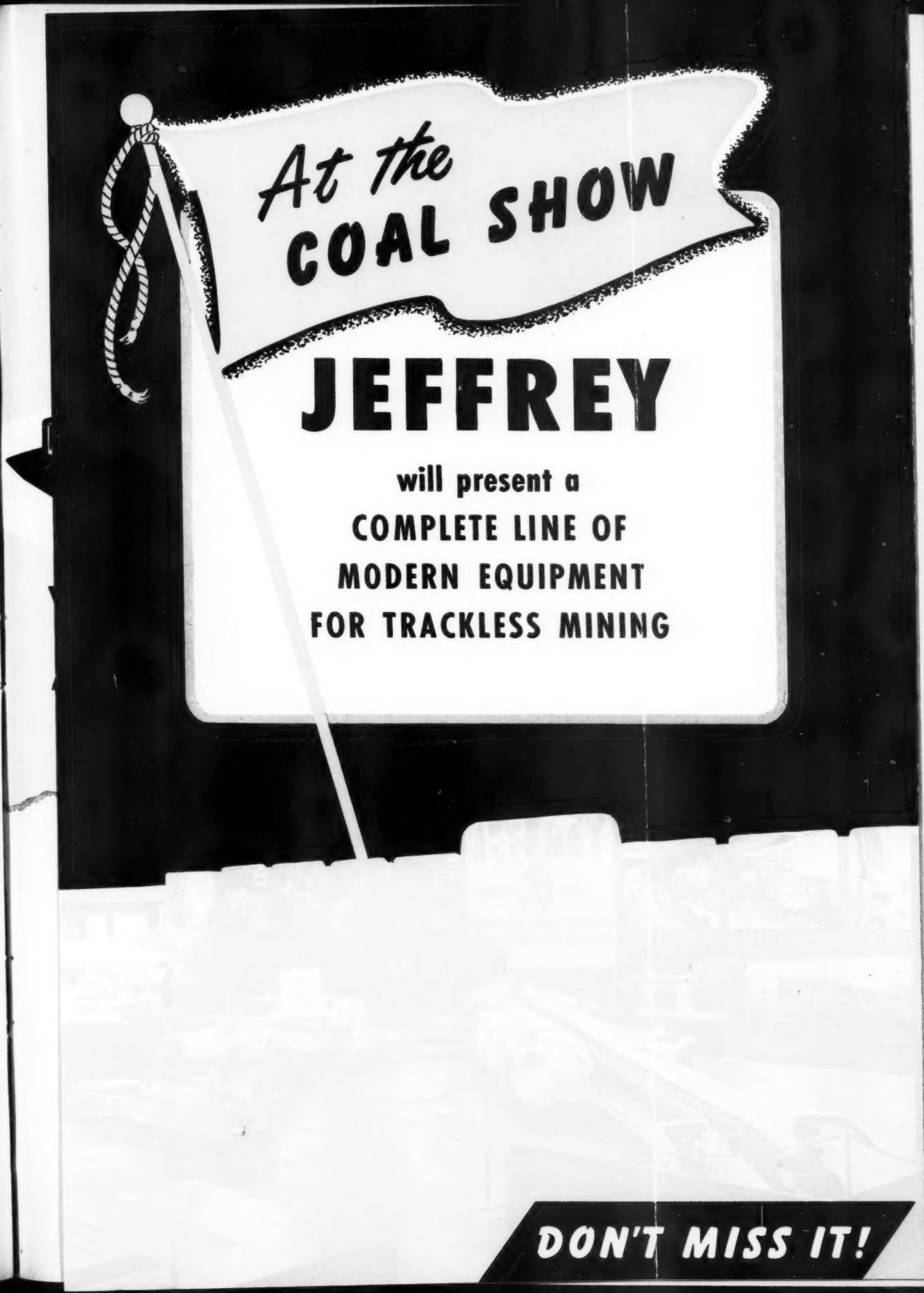
Breaker-Strip (available with or without ground wire) is only one of the many Securityflex features. Add up the advantages of Anaconda's specially compounded, extra tough neoprene jacket . . . non-kinking construction . . . improved heat-resisting synthetic rubber insulation . . . superior manufacturing techniques . . . the *Safety Firsts*.

Call your local Anaconda distributor (located in all principal cities) about Securityflex—the cable that takes a beating *and likes it!* Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

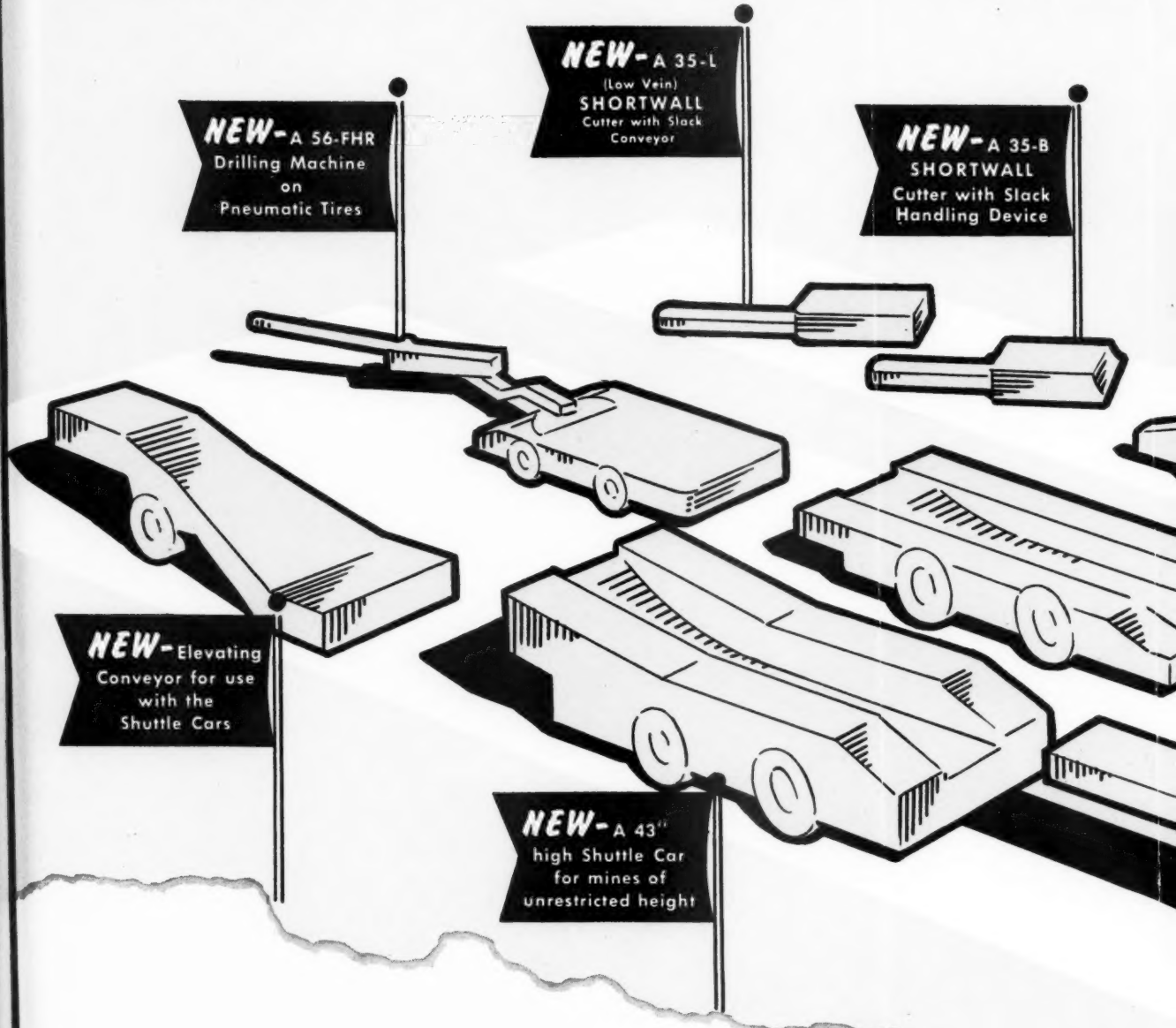
49123

ANACONDA *Securityflex* **MINE CABLE**

ANACONDA
from mine to consumer


At the COAL SHOW
JEFFREY
will present a
COMPLETE LINE OF
MODERN EQUIPMENT
FOR TRACKLESS MINING
DON'T MISS IT!

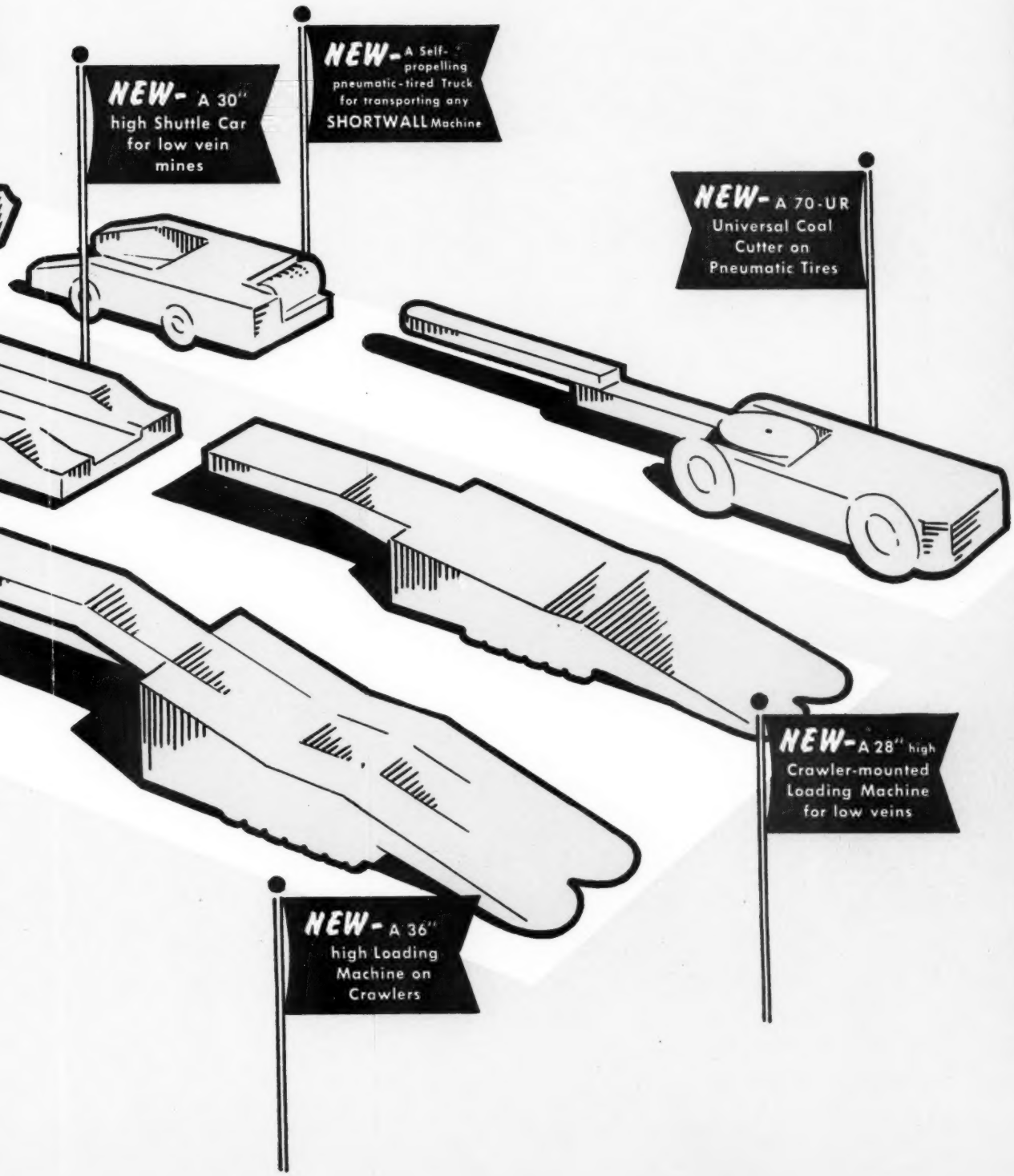
HERE IS A SNEAK PREVIEW OF THE JEFFREY



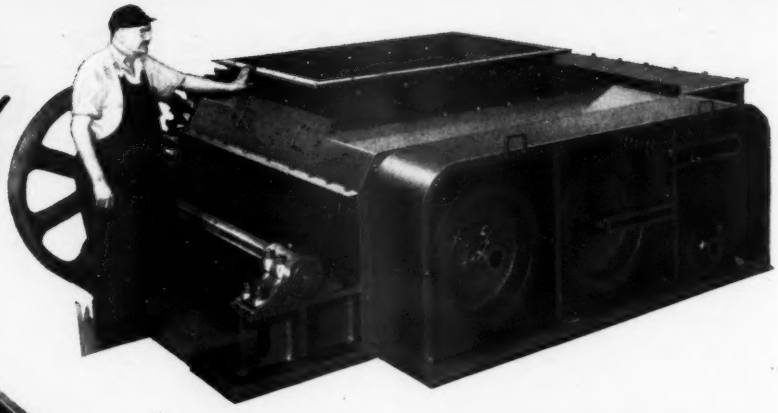
These NEW Machines will be Unveiled for the First Time..

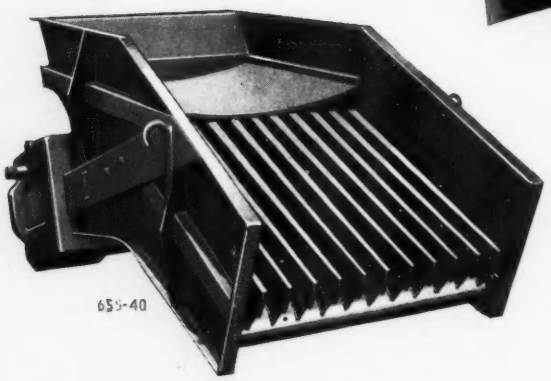
Plus other equipment of vital interest to the Industry . . . including the Jeffrey 61-CLR Conveyor-Loader which was the smash hit of the '47 Coal Show. It will be shown again for those who missed it.

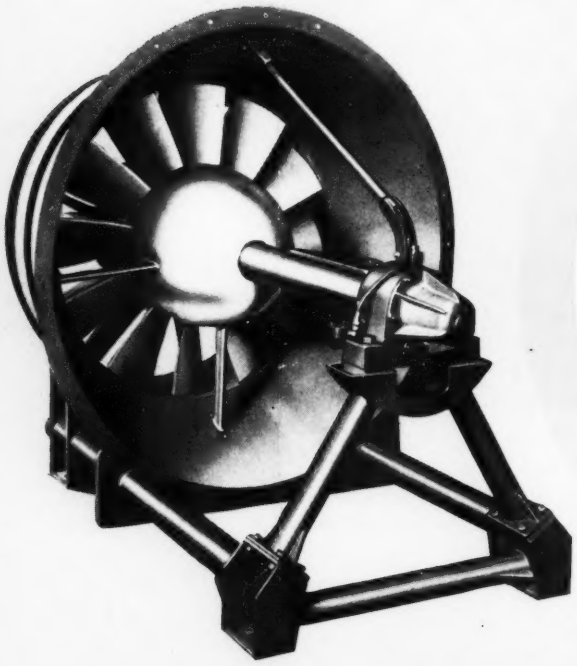
REY EXHIBIT AT THE COMING COAL SHOW


NEW- A 30" high Shuttle Car for low vein mines
NEW- A Self-propelling pneumatic-tired Truck for transporting any SHORTWALL Machine
NEW- A 70-UR Universal Coal Cutter on Pneumatic Tires
NEW- A 28" high Crawler-mounted Loading Machine for low veins
NEW- A 36" high Loading Machine on Crawlers

Also on display
AT THE
SHOW...







JEFFREY

NEW Heavy Duty Double Roll Crusher—for preparing coal ready for the Jig without further treatment. Reduces coal, refuse, slate, sulphur—everything from the mine loader—will give a 5" or larger product.

Electric Vibrating Grizzly Feeder with the NEW enclosed power unit. This feeder ideal for by-passing fines ahead of primary and secondary crushers, screens, picking tables, etc., bedding conveyors with fines. Positive control over tonnage handled.

NEW 12-A series Aerodyne Mine Fan—you'll want to see this new type unit which features: low speed; high efficiency and reliability; increased range of blade angle adjustment. Maintenance is negligible—easy to install and service.

JEFFREY EQUIPMENT FOR THE COAL MINE AND PREPARATION PLANT INCLUDES:

Coal Cutters
Drills
Loaders
Locomotives
Fans and Blowers
Shuttle Cars
Slack Conveyors
Underground Conveyors
Jigs and Washers
Loading Booms
Screens
Crushers
Belt Conveyors
Scraper Conveyors
Chains & Transmission Mach'ry
Car Pullers

THE JEFFREY MANUFACTURING COMPANY

Established in 1877

912-99 NORTH FOURTH STREET, COLUMBUS 16, OHIO

Sales Offices: Baltimore, Birmingham, Boston, Buffalo, Chicago, Cleveland, Cincinnati, Detroit, Denver, Harlan, Houston, Huntington, Jacksonville, Milwaukee, New York, Philadelphia, Pittsburgh, Scranton, St. Louis, Salt Lake City

Service Stations: Pittsburgh, Harlan, Ky., Birmingham, Mt. Vernon, Ill., Logan-Beckley, W. Va., Scranton

Foreign Plants: Jeffrey Mfg. Co., Ltd., Montreal, Quebec; British Jeffrey Diamond, Ltd., Wakefield, England; Jeffrey Galion (Pty), Ltd., Johannesburg, S. A.

GIANT Gelatins

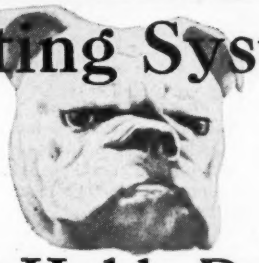
ATLAS Gelodyns

ATLAS Gelatin

ATLAS Coalite

These ATLAS Products Make Possible The

ROCKMASTER Blasting System



That Holds Down Blasting Costs!

ATLAS Apex

ATLAS Amodyns

MANASITE

ATLAS Extra Dynamite

ROCKMASTER Detonators

Equipment, explosives, blasting supplies, labor and drilling costs are up these days! But on many a blasting job, over-all costs are being held down by ROCKMASTER—the original milli-second delay blasting system pioneered by Atlas. ROCKMASTER, geared with the right explosive, makes possible outstanding savings through improvements in fragmentation and control of throw . . . and greatly decreased noise and vibration. This adds up to lower *over-all* costs!

ROCKMASTER is designed to "fit like a glove" these other Atlas developments that have made Atlas a leader in the field of explosives. Your Atlas representatives will be glad to show *you* how to make the most of ROCKMASTER advantages.

See us
Booth 400
Coal Exposition

Rockmaster, Manasite, Gelodyn, Amodyn, Apex, Coalite—Reg. U. S. Pat. Off.

ATLAS EXPLOSIVES
"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

Current Practices in Anthracite Strip Mining

Coordination of Engineering and Equipment in Deep Method Operations

By C. E. BROWN
Mining Engineer
The Philadelphia and Reading Coal and Iron Co.

IN THE Western-Middle and Southern Anthracite fields the strip mining projects are deep method operations. These operations on pitching beds present difficult problems. Due to the various geological formations, a different situation is encountered in nearly every stripping pit. Beds in the areas described pitch from 5 to 90 deg and some are on the invert in many sharp folds and faults.

Adequate engineering analysis has been applied to the more successful strippings. Some operations are being done without much preliminary planning, but many strippings would have failed completely if close supervision by the engineering department had not been maintained.

Analysis of the following elements determines the locations of potential stripping areas.

(1) The construction of cross sections over the areas, applying available data from the mine maps and records; and the drilling of sufficient diamond drill or churn drill holes to study the classification of the strata and to determine the location, thickness, and pitch of the veins of coal

(2) The analysis of coal samples from diamond or churn drill proving cores

(3) The distance from the stripping area to the overburden disposal area which must be close enough to give reasonable transporation costs and must not overlie coal that is likely to have future stripping opportunities

(4) Devise the most economical plan of operation; select the proper equipment for the job

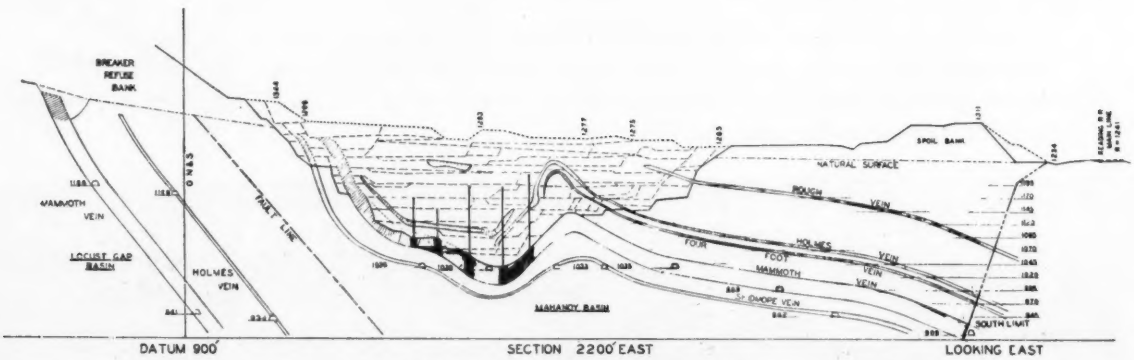
(5) Determine, by study, the depth of cut, quantities and, ultimately, the highest ratio that can be economically stripped

The practices and methods of operation at several strippings of The Philadelphia and Reading Coal and Iron Co. are described as they represent prevailing conditions throughout the entire anthracite area.

Monitor Stripping

The Monitor Stripping, located 3 miles southwest of Mt. Carmel, Pa., has been in progress for 25 years. During the early period of this proj-

General view of Monitor stripping



Typical cross section of Monitor stripping

Recorded here is the progress made by the Anthracite Industry in strip mining operations. Only the ingenuity and skill of the manufacturers who produce the heavy drilling and earth-moving equipment used, together with extensive planning and financing by coal companies and constructors have made possible the strip mining program in effect today.

ect, 70-ton Marion steam shovels, small drills, and haulage equipment worked the job and excavations were confined to shallow crop cuts.

In September 1936, the removal of a local basin, 275 ft deep was attempted. Events soon proved that existing stripping knowledge and equipment were inadequate. Time studies and cycles of all phases of the operation were instituted. The following problems developed:

(1) Proper fragmentation of hard rock for shovel equipment
(2) Good haulage roads
(3) Spoil disposal

This area had previously been first and second mined, causing partial or total collapse of overlying strata. The 6-in. blast hole used at the time proved inadequate for placing the blasting agent where it was necessary in the cracked and caved area. This often resulted in the escape of explosive gases and the value of the blasting agent lost. Only extensive and costly secondary drilling alleviated the digging problems.

Pioneering with 9-in. blast hole drills, the addition of a drill foreman, securing for the blaster an accurate log of strata cut, variation of drill spacing, and a liberal use of the proper dynamite contributed in most cases to the elimination of secondary drilling. This resulted in an improved fragmentation materially increasing the overburden production. Knowledge gained and heavier equipment has resulted in improved performance, both in drilling and in the blasting agent. In 1942, using 13 9-in. drill rigs, 42.2 miles of blast holes were drilled in 55,866 working hours. In 1948, using ten drill rigs, 46.2 miles of blast holes were drilled in 36,813 hours; representing an increase in penetration of 2.6 ft per hour. During the past year, 924 tons of dynamite were used to secure the necessary fragmentation for the removal of 2,750,000 cu yd of overburden at an average of 0.68 lb per cu yd.

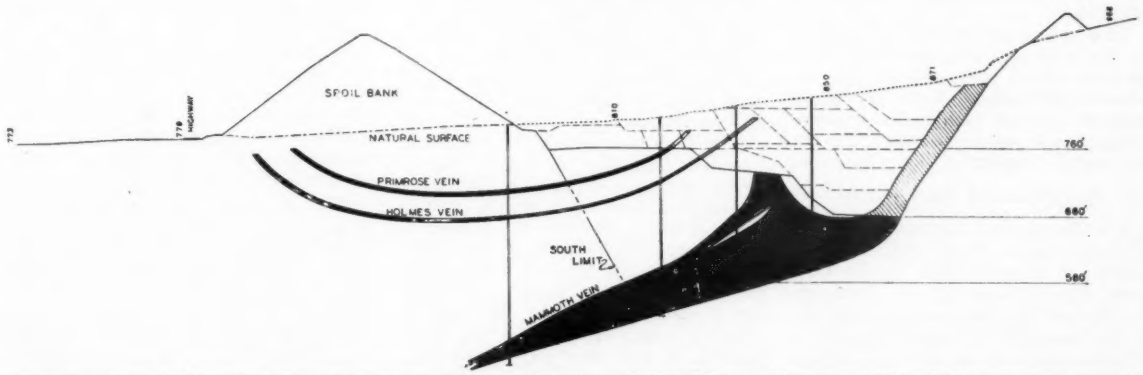
Since 1940, two 170 Bucyrus-Erie electric shovels loaded the overburden from 25 ft benches or lifts. Although eight years old, these shovels operated 94 percent of the available working time in 1948.

The present fleet of haulage units working on overburden consists of 27 10-cu yd Model FD, two 14.8 cu yd Model TD, and one 19-cu yd Model LD Euclid trucks. The 10-cu yd trucks have an average performance record exceeding 30,000 hours. The performance record of the above hauling units indicates definitely a trend toward the larger trucks.

Efficient maintenance of equipment is accomplished by well-equipped facilities for pit and shop repairs. The even-surfaced haulage roads considerably reduced the maintenance of haulage equipment.

Haulage roads are constructed of

Beechwood stripping on Mammoth Vein



Typical cross section of Beechwood stripping

selected materials from the pit and maintained by a road grader. Sprinkling trucks are used when necessary for safety and to reduce the maintenance of equipment. Roads can be termed "all-weather" as the records indicate only three days lost in the past five years, due to weather conditions. Consistent coal production has been maintained regardless of weather conditions proving that strippings can operate on a forecast production basis.

Deep anthracite strippings are confined by topography, or improvements with ultimate limits, and road reservations restricting the spoil area. Since 1924, excavating at Monitor has been confined to 243 acres, limited on the north by a high breaker refuse bank, on the east by stripping reservations, on the south by a main line railroad, and on the west by the village of Locust Gap. In this small area, 32,000,000 cu yd of overburden have been moved with 27,000,000 cu yd deposited within this perimeter. Although 8,000,000 gross raw tons of coal have been recovered, the stacking of spoil still remains the major problem.

The vertical lift between origin and disposal of spoil is 500 ft. Limited to a maximum grade of eight percent, a 6200-ft haulage road is confined within an area 4000 ft long. Necessary slopes and reservations for long haulage roads largely restrict the disposal area to the western section. As completed portions of the pit become available, they are designated for backfilling in an effort to balance the length of haul. Planning is conducted on a flexible basis and as new knowledge is acquired adjustments are readily incorporated in the plans.

For the past eight years overburden removal has remained fairly constant averaging 230,000 cu yd per month. The coal production averages 1700 pit tons daily.

Since Dick Construction Co. completed its first contract of 4,000,000 cu yd awarded in 1936, three additional extensions have been awarded, totalling over 25,000,000 cu yd of rock excavation.

This operation, due to the hardness of the rock stratum, consisting of a 30-ft bench of conglomerate and the balance principally hard sandstone, presented a real task in the development of adequate equipment for the successful completion of the contract.

Beechwood Stripping

The Beechwood Stripping, located 1½ miles east of Minersville, Pa., was started in August 1943, by the Correale Construction Co. of Hazleton, Pa. This stripping is almost entirely in the Mammoth Vein which varies in thickness from 25 to 160 ft. Due to a fault in the vein, it was necessary to divide the stripping into two main sections, stripping to the west and to the east of the faulted area: The western section, 3200 ft in length by 800 ft in width, when completed, will have reached a depth of 400 ft below the natural surface; and the eastern section, 3700 ft in length by 500 ft in width, will attain a depth of 300 ft below the surface. The estimated quantities involve the removal of 18,500,000 cu yd of unclassified overburden in order to recover 5,000,000 gross rough-cleaned tons of coal or an average ratio of 3.7 to 1.

Overburden Removal—This project commenced during the recent war period and the fact that straight shovels and heavy trucks were not available to the contractors at that time, meant the stripping overburden had to be removed by the application of large drag line excavators which were obtainable.

A 15-cu yd Type 15W Bucyrus-Monighan drag line initiated the work in August 1943. During September 1944, a 25-cu yd Type 1150 Bucyrus-Erie drag line was also placed at work.

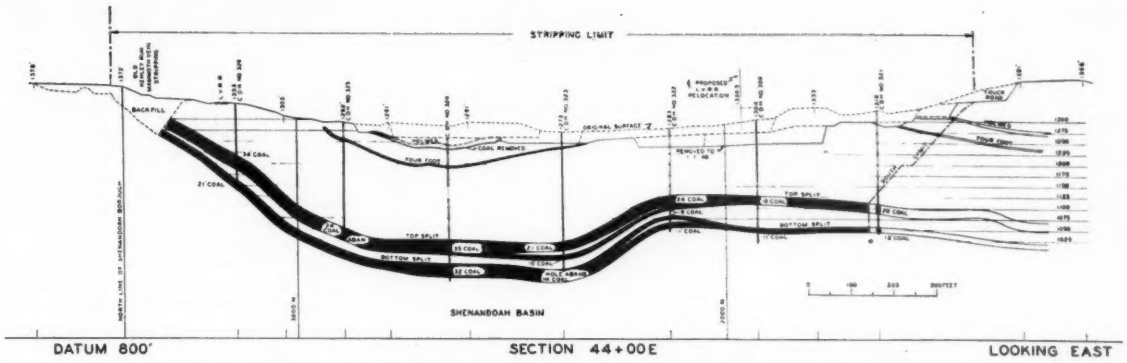
Actual stripping operations proceeded in accordance with the detailed plans. The draglines started at the outcrop of the vein and rolled the overburden back to the limits of the project, which involved rehandling of this material three times. When the overburden removal reached sufficient depth these machines were worked in tandem. In order to assure smooth operation and coordination each move of the draglines was outlined. Ramps were planned in order to maneuver these huge machines from operating levels 100 to 200 ft below the surface to the mountainous spoil piles rising 200 ft above the surface. In order to obtain the disposal area for this overburden, it was necessary to relocate State Highways, power lines, and water lines which were in close proximity to the stripping limits.

These two large draglines carried on the stripping activity in the main western section of the project until straight shovel equipment and trucks were available in July 1945.

Two 4-cu yd straight shovels were then employed operating on benches 25 ft deep and loading into trucks to remove the overburden below the dragline excavation. Again ramps were planned due to the depth to be attained and the confines of the stripping caused by the length, contour, and 50 deg slope or pitch of the vein. A ramp on eight percent grade was made along the south wall of the stripping starting near the western limit and advancing eastward to a point near the center of the job, at which point it circled in the stripping, back to the western limit. From this ramp the western portion of this section has been completed and made available for backfill area. Up to this time, the overburden removed by the straight shovel had been hauled to an overburden disposal site located one-half mile from the stripping. Backfilling of the western portion is now underway and a ramp is being constructed on this backfill on an eight percent descending grade across the stripping along the west wall and eastward along the bottom slate of the vein to the bottom of the pit. From this ramp, the remaining overburden and coal in the eastern portion of this section will be removed.

Coal conveyor belt from Beechwood stripping

Coal Removal—The stripping coal is dug with a 4-cu yd shovel, loaded into trucks, and transported from the pit to a cleaner plant where the coarse rock is removed and the coal sized to minus 6 in. It then passes by conveyor belt over an automatic weighing device to the company's breaker for final cleaning and preparation for market. Handling is simplified with this 36-in. conveyor belt which is 3000



Typical cross section of Shenandoah stripping

ft long, travels 350 fpm and handles an average of 300 tons per hour.

Shenandoah Stripping

The Shen-Penn Production Co. began operations on August 26, 1946, in the Shenandoah Stripping Area, and is one of the largest open-pit mines in the Anthracite Region.

Established limits of the project were set from data obtained from surveys and mine maps, 46 old ventilation and 124 recent exploratory drill holes, varying in depth from a minimum of 40 ft to a maximum of 448 ft and totalling 27,899 ft of drill hole prospecting. The stripping will involve the use of 291 surface acres. It is estimated 68,500,000 cu yd of overburden must be removed to recover 11,500,000 gross tons of rough-cleaned coal, in an area 7900 ft long, 3000 ft at its maximum width, and to a maximum depth of 400 ft.

On December 31, 1932, fire was discovered in the underground workings of Shenandoah City Colliery in the Skidmore Vein, which underlies the lowest vein contemplated in stripping operations. Since that date, the active fire has spread rapidly, both longitudinally and vertically, through the dividing strata between and through old workings in the veins overlying the Skidmore, and is now encountered in overburden removal. It is unbelievable to observe the red colored rock divider being removed in the stripping and the coal being recovered without showing any evidence of deterioration. The fire probably will involve the removal of overburden and the recovery of the coal in an area 1500 ft long, 600 ft wide and 200 ft in depth. Upwards of 6,000,000 cu yd of overburden, surrounding and within the fire area, must be removed within the next two years, before this condition is eliminated, or at least cut off the spreading of the fire from travelling under the built-up section of the Shenandoah Borough.

The stripping project is split diagonally near its center into two sections by a State Highway leading from St. Nicholas to Shenandoah—the eastern or Yatesville Area, and the western or Shenandoah City Area. The north limit of the western area skirts along the built-up portion of Shenandoah Borough.

At Shenandoah stripping, blasting requires close control

The eastern area will recover five veins which are part of the general syncline forming the Shenandoah Basin, namely, the Holmes, Four Foot and the Top, Middle, and Bottom Splits of the Mammoth Vein.

A slip fault with a displacement of approximately 500 ft along a 45 deg plane runs lengthwise with this basin near the south limit of the Shenandoah City Area. Portions of all these coal seams have been mined by previous underground workings, which ceased operation in 1932.

Overburden from the western section is being hauled to five dumping points in the spoil area outside the project limits, with hauling distances averaging 3200 ft on ascending grades of seven percent. The overburden classification over the entire project is as follows: wash or clay 11 percent; slate 37 percent; sandstone 38 percent; and conglomerate 14 percent. The main inlet ramps are excavated on seven percent descending grades; branch bench cuts 25 ft in height and with a minimum width of 100 ft, wherever possible, to provide ample space for spotting trucks on both sides of the shovel, advance levels off the various main inlet ramps.

During the year 1948, 7,700,000 cu yd of overburden were removed from within the stripping limits. Overburden removal is now averaging 36,000 cu yd per day. All of this overburden material has been hauled to spoil areas outside the project limits, excepting 3,000,000 cu yd which have been deposited as backfill in 2900 ft of completed sections. The overburden haul varies according to the location of the shovels, averaging 3400 ft, all on seven percent ascending grades.

Daily coal production has now

reached 4100 tons of rough-cleaned coal; however, this production will increase to 5000 tons. To date, 1,127,000 gross tons of rough-cleaned coal have been removed from the entire project, of which 421,000 tons from the eastern area were trucked out the main inlet ramp and hauled via existing colliery road a distance of 1.6 miles to Suffolk Ramp. In order to provide greater flexibility of operation and at the same time eliminate road maintenance on two coal truck roads an underpass situated south of the southern limit has been constructed. Since October 8, 1948, coal trucks from the Yatesville Area have been routed through this underpass making a junction with the coal truck traffic from the Shenandoah City Area, both travelling loaded to Suffolk ramp, where it is fed to a 48-in. belt conveyor which transports the run-of-stripping coal to the Maple Hill cleaner plant for rough-cleaning; thence to the St. Nicholas Breaker for final preparation. The coal trucks serve another purpose in that they are used to truck out 1100 tons of refuse from the Maple Hill cleaner plant hopper and dump their load of waste on the overburden spoil dumps on their return trip to the pit. Considerable quantity of the refuse is utilized in maintaining the coal truck road and the overburden roads within the pit.

Twenty-one 42T 9-in. Bucyrus-Erie churn drills are in operation, four of which are Diesel driven and the remaining 17 electric, operating from 4160/460-v field transformers; all working two seven-hour shifts per day. To keep each overburden shovel operating continuously requires advance drilling by three or more drills, depending upon the characteristics of the overburden, All blast holes are drilled to a depth of 30 ft, generally on 18 by 18-ft centers, to insure a bench cut 25 ft in height for loading. During the past year, 374,743 lineal feet of 9-in. diam blast hole were drilled, with each drill bit averaging 28 ft of hole.

Most of the drill holes are loaded with 250 to 300 lb of Atlas Exdyn, Hercules Titan B or Dupont Nitramon Explosives, with a round of shots varying from 250 lb to 20,000 lb of explosives, the lesser amount being used as a precautionary measure when blasting in the vicinity of the built-up portion of Shenandoah Borough.

At least 18 ft of stemming is used in each blast hole. To date, in the eastern area, all holes have been connected and detonated with Primacord; while in the western area, a Model 2A split-second timing and blasting machine, with energy from a 110-v, a-c supply and a selected timing of from 20 to 28 milliseconds, has been used. A Model 2 three-component Leet Seismograph, operated from a 115-v, a-c power supply, is used to record the ground displacement of each blast, which is limited to a maximum 0.03 in. at the dwelling closest to the stripping limit.

Wadesville Stripping

During the past summer, the Wadesville Production Co. started work on a large stripping project near St. Clair, Pa., involving the removal of 94,000,000 cu yd of overburden. Preliminary excavation is being accomplished by LaPlante-Choate motor scrapers, preparing the surface for shovel and drill equipment.

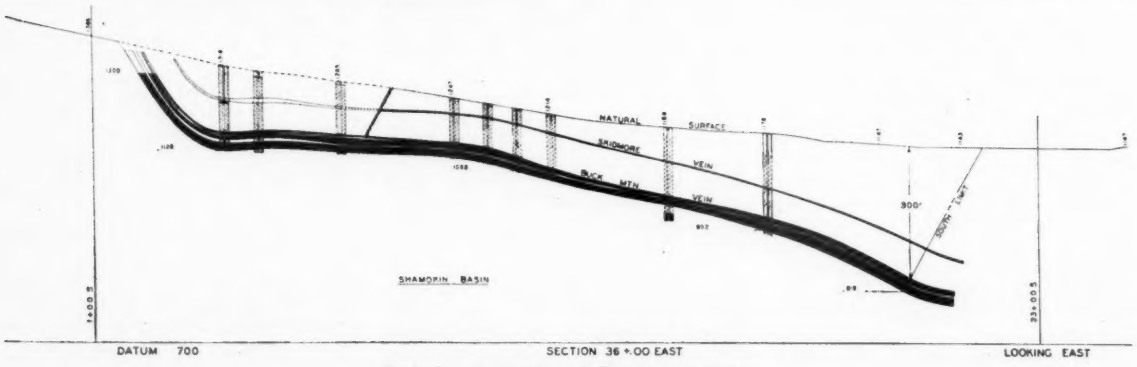
This project is a straight shovel proposition. A 6-cu yd machine went into operation January 3, 1949, which is the first of five units. It is estimated it will require 16 years to complete this stripping. Production rates are set at 30,000 cu yd and 4300 tons of coal per day, after all equipment is at work. A maximum cut of 500 ft is contemplated in this plan.

Trevorton Stripping

The Trevorton Stripping, located south of Trevorton, Pa., at the extreme western limit of the Western-Middle Anthracite Coal Fields, is under contract to the Dick Construction Co. and the Capparell Construction Co., both of Hazleton, Pa., and covers an area of six square miles.

Work began in August 1942 with the introduction of several small draglines. At the present time, a 22-cu yd 1150B Bucyrus-Monighan electric dragline with a 200-ft boom, two 8-cu yd 9W Bucyrus-Monighan electric draglines with 200 ft booms and one 5-cu yd 120B Bucyrus-Erie electric

Trevorton stripping is extensive



Typical cross section of Trevorton stripping

shovel, are the principal excavators on this project. The overburden equipment is working on three seven-hour shifts and the coal loading equipment on two seven-hour shifts. The production on the two shifts, 3700 gross raw tons of coal, is hauled by truck three miles to the Stevens Coal Co.'s plant for final preparation.

Initial plans and estimates called for the stripping of three veins, the Buck Mountain, Mammoth, and Holmes, representing 20 miles of outcrop stripping in 11 pits, and the removal of 20,000,000 cu yd of overburden by dragline at an average ratio of 4 to 1.

Additional stripping areas were developed by means of churn drill prospecting and proving trenches, with the result that, to date, 22 pits on seven veins (from the Lykens Valley No. 3 vein to and including the Rough No. 10½ vein), representing 24 miles of outcrop and 414 surface acres, have been stripped. To date, 6,856,000 lb of dynamite have been used with an average of 0.4 lb per cu yd of rock blasted.

Overburden removal at Trevorton stripping

The veins being stripped pitch from 5 to 75 deg and average in thickness from 5 ft in the Lykens Valley to 37 ft in the Mammoth Vein. Approximately 63 percent of the area stripped had been previously first- and second-mined and 37 percent is virgin; 90 percent of the overburden has been cast by draglines and 10 percent, which represents divider and gob, has been hauled by truck. The problem of road grades is thereby eliminated due to the small percentage of overburden being hauled by trucks. Plans are being studied to increase the present ratio limits on this project.

The proposed depth of the Buck Mountain pit will then approximate 300 ft and the Mammoth, 200 ft. The top cuts on the two pits will be worked off on 25-ft benches by straight shovels, and the overburden hauled by truck until a depth has been reached from where the overburden can be handled by the 22-cu yd electric dragline, from which point the two pits will be worked in conjunction with one another.

The Trevorton stripping differs in respect to the other projects covered, in that the terrain and geology favor the use of dragline excavators as the prime mover of the overburden.

Notable Projects

Many other comparable projects could be described in detail and several must be briefly mentioned. The Greenwood Forty-foot Mammoth Stripping at Tamaqua, Pa., is a huge undertaking, involving the excavation of over 40,000,000 cu yd of overburden. This is a project of the Lehigh Navigation Coal Co., on which Carey, Baxter & Kennedy, Inc., are the contractors. The job is unusual in that, due to its limited area and extreme depth, all of the overburden must be deposited outside the pit limits. Type 170B 6-cu yd shovels, loading the overburden into Mack 3-axle, chain-driven units, working on eight percent grades, are doing an excellent job.

J. Robert Bazley's Logan Mammoth Vein Stripping, near Centralia, Pa., is a unique dragline stripping. The natural wash, 30 ft deep, overlying the Mammoth Basin in this locality, is removed by motor scrapers. The rock, averaging 90 ft to the center of the basin, is then drilled and blasted. A type 7400 Marion dragline with a 200-ft boom and a 9-cu yd bucket, casts the overburden back into the completed portion of the pit. The coal, averaging 25 ft in thickness, is raised by the same dragline and laid on stock piles to be reloaded by smaller type shovels into trucks and transported to a cleaner plant where the railroad cars are loaded for shipment to the preparation plant. Hence, this project was planned without the use of straight shovels and overburden trucks.

Conclusion

Each subdivision of a large stripping has specialized personnel at work in order to attain maximum efficiency on all phases of the job. Adequate shops for maintenance of equipment, planning and layout of the right moves of the overburden shovels to assure continuity of coal production, proper laying out of blast holes, supervision of loading and blasting, and transportation and road maintenance, are some of the essential factors necessary to obtain minimum costs.

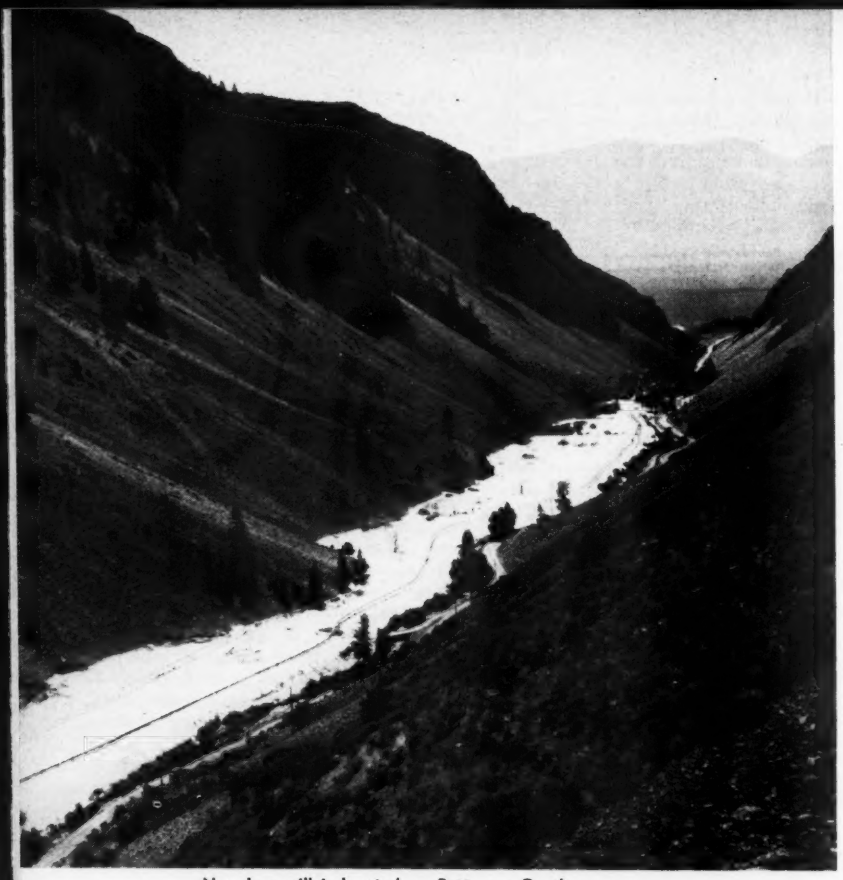
The net results of better stripping equipment and planning and supervision, have given noticeable effect on the ratio, i.e., cubic yards removed to tons of coal recoverable.

By comparison a performance study made on 18 jobs during 1942 showed an average ratio of 3.91 to 1 was attained. In 1943, on 24 jobs, the average ratio reached 4.42 to 1. During 1947, on 37 contracts in the Western-Middle and Southern fields, these combined jobs, worked by 116 shovels and draglines of various capacities, removed 37,000,000 cu yd of overburden at an average ratio of 5.11 to 1. Today the industry is working on about a six to 1 ratio.

What will be the eventual ratio attained is anyone's guess; however, it is a recognized fact that the work in the future, due to extending limits of present strippings and the layout of deeper projects will tend to raise the average ratio now accomplished. Some current strippings are known to be working on seven and eight to 1 ratios. Physical conditions, classification of strata, equipment efficiency, and quality of coal and realizations have made these high ratio jobs possible.

Continuous study is in progress to improve the cost structure of handling the overburden, increase results from drilling and blasting, and reduce expenditures in the transportation of the materials.

Knowing the facts, it becomes the obligation of everyone connected with this earth-moving program to improve the results thus far obtained. In no uncertain terms, increased profitable ratio means increased numbers of stripping projects required for the successful continuance of this important tonnage in the Anthracite producing fields.



New Ima mill is located on Patterson Creek

Ima Mine Resumes Operations

By J. A. MECIA
Manager
Ima Mine

Idaho's Tungsten Producer Designs New Mill to Increase Efficiency

THE IMA Mine, operated by the Bradley Mining Co., is the only producing tungsten mine in Idaho. It is one of the principal tungsten producers in the United States, and is one of the two tungsten operations in the United States producing huebnerite—the other being the Hamme mine in North Carolina. The mine is located one mile from the village of Patterson, in the Blue Wing mining district, Lemhi County, in eastern Idaho. In the summer and fall, Mackay, the nearest rail point, is reached by a 56-mile graveled road. In the winter and spring it is necessary to travel 110 miles over a road which is partly graveled and partly oiled to reach Mackay.

Two large groups of claims constitute the known productive area. One group is owned by the Ima Mines Corp. and the other by the Tungsten Mining Corp. Both properties are operated by the Bradley Mining Co. under lease agreements with options to purchase.

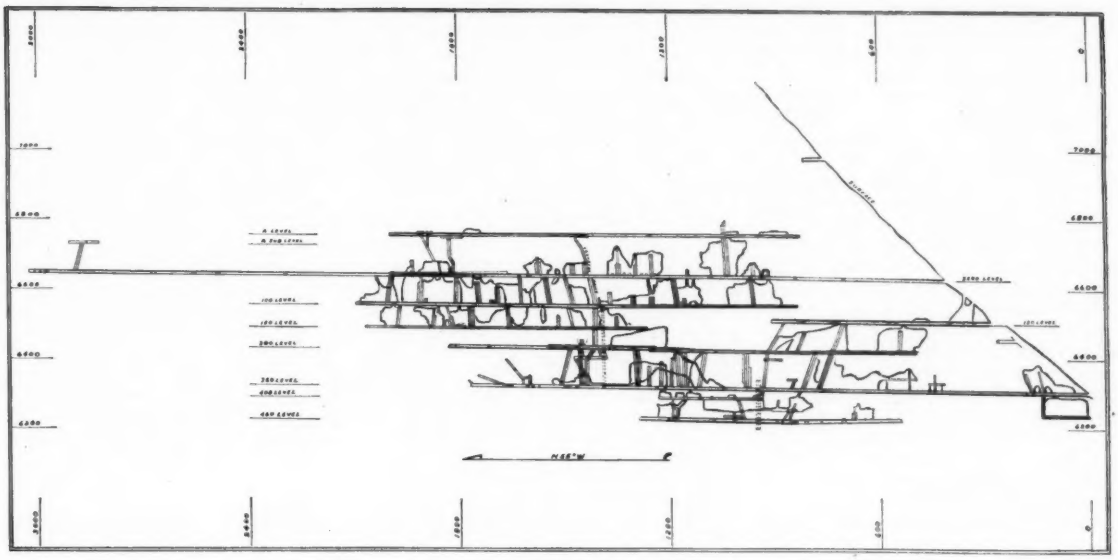
In 1881 the district was prospected for gold and silver, but it was not until 1903 that tungsten-bearing minerals were recognized. The first attempt was made to recover tungsten concentrates in 1909. From 1912 to 1934 operations were conducted intermittently by several different operators. In 1934 the Ima Mines Corp. purchased the claims located in Patterson Creek Canyon, and operated the property until 1945 when the operation was taken over by the Bradley Mining Co.

In 1938 the General Electric Co. entered the district and acquired a large block of claims, known as the Mazda group, to the northwest of the Ima property. The General Electric property was later acquired by the Tungsten Mining Corp., in which the General Electric Co. has a substantial ownership. Exploration work performed by the General Electric Co. on its property consisted of driving a cross-cut tunnel over 2000 ft long, drifting, diamond drilling, and extensive trenching with a bulldozer. Steady production from the General Electric property did not commence until 1946 when it was leased by the Bradley Mining Co. All ore extracted from the Mazda group of claims is transported through the Ima workings and then processed in the Ima mill.

From 1935 through 1947 the Ima mine produced 321,474 tons of ore. Milling produced 117,768 short ton units of WO_3, 507,450 oz of silver, 866,003 lb of copper, and 1,173,210 lb of lead. Net receipts from all concentrates total approximately $2,875,000. On December 9, 1947, the Ima concentrator was destroyed by fire. Since that date, development work in the mine has continued, and on June 1, 1948, erection of a new concentrator was begun. The new concentrator commenced operating in December 1948.

Intricate Vein System and Intensive Faulting Complicate Mining

The principal country rocks in the district are quartzite and granite. The well-bedded quartzites, which range from pure quartzose types to occasional highly argillaceous facies, are probably all part of the Pre-Cambrian



Longitudinal section of Ima Mine

Belt Series which extends north and northwest into the Coeur d'Alene district of northern Idaho. The metamorphic rocks have been intruded by irregular tongues, dikes, and stock-like bodies of granite. The granite is not known to outcrop in the immediate vicinity of the mine, but is found only in the underground workings.

Both the quartzites and granite in the immediate area of the mine are badly faulted. Several different systems of faults have been recognized most troublesome of which has been a series of flat faults. Most if not all of the faults are pre-mineral in origin, and most faults give evidence of being active before, during, and after mineralization. Most fault offsets are small, up to 5 or 10 ft, but occasional displacements may exceed 100 ft.

Ore occurs in quartz veins which strike north and northwest and dip southwest or northeast. The dip on most veins is in excess of 45 deg, though a few recently developed veins are much flatter. The veins pinch and swell at frequent intervals and are somewhat lenticular. Veins mined to date vary from 2 to 15 ft wide. Many small stringers branch from the principal veins; some of the stringers widening to minable widths. More than 15 productive veins are known.

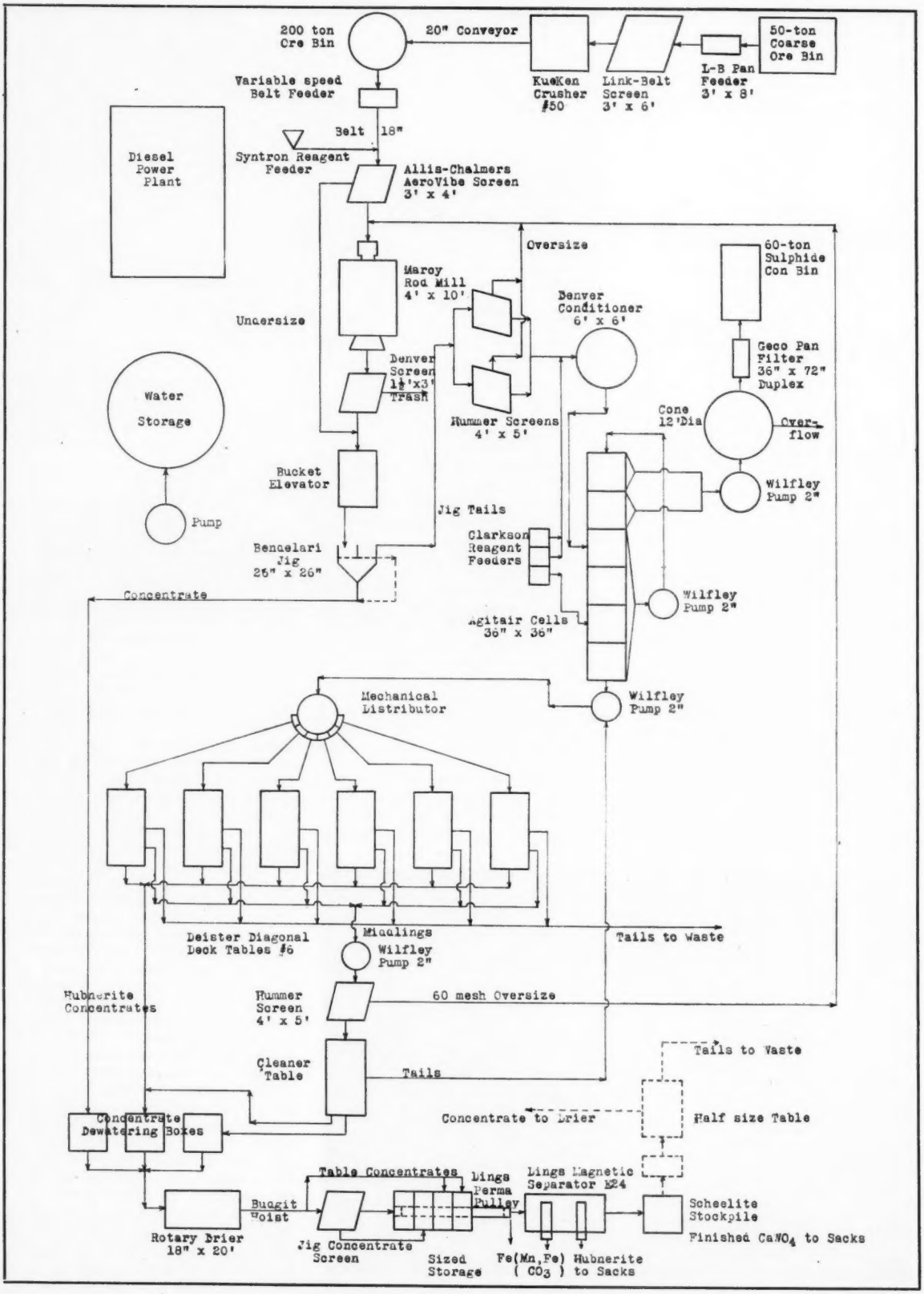
Although the persistence of the veins is interrupted frequently by faulting and pinching, they have been developed for a strike distance of 2900 ft and a vertical distance of 540 ft, with strong indications of far greater vertical and lateral development. About 90 percent of all ore extracted has come from veins in quartzite, and only 10 percent from veins in granite. This might imply that the quartzite is a more favorable host rock, but recent development work has opened up good veins in granite, suggesting that more extensive exploration in granite will develop additional commercial orebodies.

Square set stoping on wide vein

Ore minerals in the veins are huebnerite, scheelite, tetrahedrite, galena, chalcopyrite, sphalerite, molybdenite, and pyrite. Huebnerite is the most important mineral in the ore and accounts for most of the tungsten produced. Scheelite is usually associated with the huebnerite and accounts for six to seven percent of the tungsten produced. The WO_3 content of the veins mined varies from 0.40 to 1.50 percent. The most valuable sulphide mineral is tetrahedrite, which contains most of the silver and copper. The silver content of the veins averages over two ounces. The copper content in the ore averages 0.25 percent and the lead averages 0.35 percent. Molybdenite comprises about 0.10 percent of the ore and is more abundant near the granite contacts. No attempt has been made to recover molybdenum in the mill.

Quartz, orthoclase, sericite, fluorite, rhodochrosite, and siderite are the principal gangue minerals in the veins, with quartz making up 85 to 90 percent of the vein material.

The veins vary in composition from quartz-orthoclase veins which contain no huebnerite, to veins containing huebnerite, tetrahedrite and most or all of the other ore minerals, as well



New flowsheet provides for scheelite recovery

as rhodochrosite and fluorite. The quartz-orthoclase veins which usually carry pyrite and molybdenite, but no huebnerite, are known locally as "early" veins, and the veins carrying huebnerite are known as "late" veins. Both types commonly occur together, however the "early" veins often strike at a right angle to the "late" ones.

An extremely complex vein system and intense faulting make the mining of the Ima orebodies difficult. It is necessary to map the geology carefully in all development headings and stopes in order to determine the particular mining method to be used in mining each block of ground. Geologic mapping of all workings is done on a scale of 20 ft to the inch, and all mapping is studied carefully by the mining department in planning future stoping methods and development procedure.

Drilling Locates Faulted Vein Segments

A large amount of diamond drilling and long-hole drilling is necessary in order to locate faulted segments of veins in nearly every section of ground mined. Diamond drilling is done with a Sullivan HS-15 drill. Long-hole drilling is done with an Ingersoll-Rand DA-35 drifter, using extension rods and drilling holes up to 35 ft in length. A total of 22,000 ft of diamond drilling has been done on the Ima group of claims, most of it by Bradley Mining Co. since 1945. Nearly 5000 ft of diamond drilling was done on the Mazda property by the General Electric Co. indicating a lengthy extension of the ore zone to the northwest.

Three adits—two at the elevation of the mill, called the 360 level, and one 330 ft above the mill elevation, called the Zero level, provide access to the mine. Nine levels have been driven, seven above the 360 level and one reached by a 100-ft vertical underground shaft below the 360 level.

Detachable bits are used throughout the mine. Preliminary tests have been run using tungsten-carbide bits on alloy steel rods, with extremely favorable results, indicating a substantial saving in drilling costs. With the resumption of full scale mining operations following completion of the new concentrator, tungsten carbide bits are being used extensively throughout the mine.

Stoping methods vary with the character of the rock to be mined. Square-set stoping, which is the most widely employed method, is used where the veins are wide and the wall rock is weak. Other stoping methods employed are shrinkage, horizontal cut and fill, and open stopes using stulls and head boards.

Ingersoll-Rand R58 and Gardner-Denver R101 stopers are used for drilling in stopes, and small, double-drum slushers are used when necessary. The contract system is being used in development work and stoping.

Ore from all the main levels above the 360 level is transported to a transfer raise, and is taken from the transfer raise at the 360 level in 18-cu ft cars and pulled to the crushing plant by a Mancha Little Trammer.

Several sections of the mine are connected with the surface thereby providing excellent ventilation throughout most of the mine. Forced ventilation is required in some areas, however, and at the present time the northwest workings of the Zero level are being ventilated by a 15-hp Ventair fan, forcing fresh air through 12-in. Ventube.

A crew of 35 men were employed underground when the tonnage supplied to the mill was only 100 to 110 tons per day. The new mill with a capacity of 135 to 150 tons per day, requires a crew of 35 underground men. The increase in tons per man shift expected when full-scale mining operations are resumed will result from better ore handling facilities.

Four-place plane serves mines

Mill Changes Improve Recovery

In 1909 the first mill built to concentrate ore from the Ima mine was completed. A new mill was built in 1912 at the portal of the 360 level tunnel, a wooden frame structure covered with tar paper. During the 35 years until it was destroyed by fire, many changes had been made in the building itself and in the flowsheet. The unsatisfactory result was a mill that "just grew" with equipment poorly arranged and operating floors crowded.

When the property was acquired by the Bradley Mining Co. in January 1945, the flowsheet of the Ima mill was characterized by single stage crushing to 1½ in., grinding in a 64½ Marcy ball mill, three jigging steps in the ball mill, classifier, screen circuit, then flotation of the sulphides, another jigging step, conditioning and flotation of huebnerite, and then table concentration of the huebnerite flotation concentrate. All jig and table concentrates were passed through magnetic separators. A study of mill records for several years prior to 1945 indicates that recovery of tungsten using this flowsheet was approximately 68 percent, and recovery of silver was about 78 percent. The tungsten concentrates produced averaged 66 to 68 percent WO_3 and the bulk sulphide concentrate averaged approximately 44 oz silver, 3.75 percent copper and 5.00 percent lead per ton.

Early in 1945 the question of changing the flowsheet in order to improve recovery and grade of concentrates, and to reduce operating costs, was considered by the Bradley Mining Co. It was felt that the following features of the flowsheet then in use should be corrected:

(1) The feed delivered by the

crusher to the ball mill was too coarse, causing sliming of huebnerite in the mill.

(2) The four jigging steps introduced excess water into the circuit before sulphite flotation causing dilution of the pulp to 10 percent solids instead of 35 percent, which would have given the best results.

(3) The numerous concentrating steps and arrangement of equipment made it necessary to employ a larger milling crew than was warranted by the tonnage milled.

(4) Tabling of the huebnerite flotation concentrates was unsuccessful due to the flocculation to fine huebnerite particles.

(5) There were no provisions for recovering scheelite.

The mill was remodeled in July 1945, following the development of a new flowsheet in the laboratory and a five-ton, pilot plant test. The new flowsheet was characterized by crushing to 1 in., grinding to 35 mesh in a 64½ Marcy ball mill, one jigging step followed the ball mill, sulphide flotation, and tabling of the flotation tails. Thus it was possible to: eliminate three jigging steps which in turn prevented dilution of the sulphide flotation circuit, and eliminate the huebnerite flotation circuit. Nearly all the equipment in the mill was rearranged to provide more efficient operation. Although it was recognized that a new crushing plant capable of delivering a finer mill feed was needed and also that a rod mill was preferable to a ball mill in order to achieve less sliming in the grinding unit, these changes were scheduled to be made at a later date as the possibilities of the mine became better developed by the new management.

The new flowsheet resulted in the following improvements:

(1) The recovery of tungsten improved until, in 1947, it was 79 percent as opposed to 68 percent with the old flowsheet.

(2) The recovery of silver improved from 78 percent to 85 percent.

(3) The grade of tungsten concentrates rose to 72 percent WO_3 with resulting decrease in impurities.

(4) The grade of sulphide concentrates improved substantially in silver, copper, and lead content.

(5) In running the table concentrates through the magnetic separator the nonmagnetic material made a scheelite concentrate, thus resulting in saving the scheelite.

(6) The mill operating crew was cut from 14 to 8 men.

Although the new concentrator, which started operating in December 1948, employs substantially the same flowsheet used before the mill was destroyed, it is expected that the improvements provided in the new mill will substantially improve the quality of the huebnerite concentrates, the analysis of which shortly prior to the burning of the mill in 1947 was as follows:

	Percent
WO_3	71.94
Mo	0.026
P	None
As	0.034
Sb	0.03
Cu	0.033
Pb	0.085
Zn	0.050
Sn	None
Bi	None
S	0.10
Mn	11.52

An additional improvement in recovery is expected with the installation of a new crushing plant and 4 by 10-ft Marcy rod millchanges which were contemplated but not made in 1945. The Western-Knapp Engineering Co., San Francisco, erected the new mill, a steel and concrete structure with a capacity of 135 to 150 tons per day. The mill and crushing plant is operated by an eight-man crew, made up of an operator and

(*Continued on page* 122)

An early phase of the new mill construction

Comfortable housing for Ima Mine employes

Hard hats, permissible lamps, and protective footwear reduce hazards underground

Safety Education—A Suggested Program

A Report of the Committee on Mine Safety

By E. R. PRICE
Chairman
Wheelwright, Ky.

SAFETY EDUCATION is one of the most important phases of an effective accident prevention program, and it should be realized that the lead in any safety movement must be taken by the company management at the top level. As evidence of management's sincerity, the company must provide and maintain all reasonable safeguards for protection against accidents but these in themselves are not sufficient to prevent injuries to workmen. In the final analysis, the human element is the deciding factor, and no safeguard will ever be effective unless properly used and observed by the employes. It should, therefore, be the aim of an educational program to so inculcate safety habits that safe methods of working become automatic.

An effective program of safety education will focus the attention of the mine workers and officials on accident prevention. Education, which is the sharing of knowledge, disciplines the mind, and that is just as true in safety as in any field of endeavor. It is recognized that the type or size of an educational plan will depend upon the extent of the operations of each coal company, and it is, therefore, not intended that the program outlined in this report can be applied by the industry generally. The Committee, however, is hopeful that the report will contribute in some measure in promoting safety to the end that there will be a reduction in the toll of accidents now occurring.

Outline of Program

Our suggested program is set up under the following eight headings, namely:

(1) Policy and organization
(2) Function of top management
(3) Labor relations training for supervisors
(4) Accident prevention training for mine officials
(5) Safety instruction course for mine workers
(6) Safety incentives
(7) Safety education for schools in mining communities
(8) General

Policy and Organization

Safety education should be the foundation upon which a well organized program for the prevention of accidents can be constructed, and it should be the policy of every company to establish within its organization a system of training that will meet the conditions at its mines. If such a program is to be effective, it should come under the direction of a department head who would be responsible for setting up and maintaining the type of program required. Where there is a separate department of safety, the promotion of education should be under the direction of the safety engineer or director of safety.

Function of Top Management

The operating head of the company should take the lead in doing those things which are necessary to convince his own safety department, as well as the men who are in daily contact with the hazards of coal mining, that safety pays; not only in protecting the individual workman, but also in efficiency of operation. He must be the spark plug for safety in his own organization.

He should keep in constant touch with the accident statistics and be the first one in the organization to recognize good safety performance. His personal interest evidenced by attending conferences and meetings, in promoting incentive plans, in writing letters from time to time emphasizing certain hazards, etc., will do much towards stimulating interest in safety on the part of the supervisory organization and among the workmen. He should at all times insist upon the strict observance of established safety standards and rules.

Labor Relations Training

In order to improve management-worker relations, which are essential to a successful educational program, there should be established some type of training program for supervisors for the purpose of instructing them how to approach and get along with other men, also in the most effective manner of instructing men under their supervision so that the men will understand and know what is expected.

It is also important that all supervisors have a clear understanding of the wage agreement with the mine workers so that they know under what circumstances disciplinary action can be taken for failure of mine workers to observe the established safety rules and regulations.

It is equally important that the supervisors should be informed of all umpire decisions in grievance cases where questions of safety are involved.

Accident Prevention Training

This type of training is necessary if the mine officials are to have a broad knowledge of the contributing causes of accidents and of the means of preventing them. The U. S. Bureau of Mines has prepared a course in accident prevention for mine officials which we recommend for all supervisors; this is in ten sections under the following titles:

(1) The prevention of accidents from falls of roof and coal

(2) The prevention of haulage accidents

(3) The prevention of explosions and fires

(4) The prevention of electrical accidents

(5) The prevention of explosives accidents

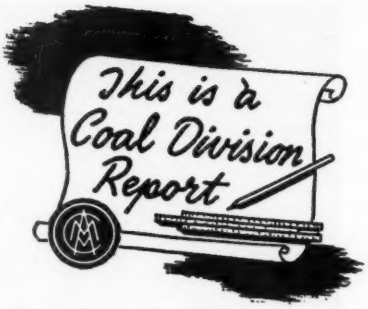
(6) Miscellaneous accident prevention

(7) The value of accident statistics

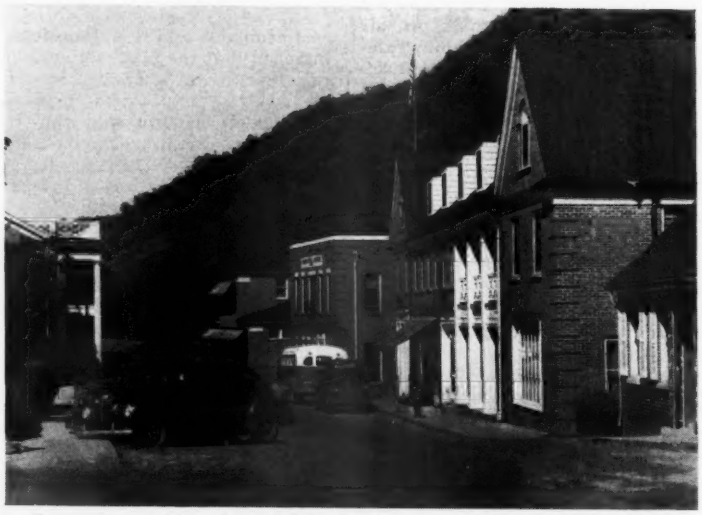
Our Committee has purposely avoided a detailed description of this course, but we do suggest a close perusal of its outline.

To illustrate the thoroughness with which each of the above subjects has been covered; the section relating to "The Prevention of Accidents from Falls of Roof and Coal" is subdivided under the following headings: (a) The importance of roof and coal fall hazard, (b) Roof and coal falls, (c) Method of mining, (d) Character of roof material, (e) Roof inspecting and testing, (f) Roof supports, (g) Advance mining, (h) Retreat mining, (i) Working face most dangerous area, (j) Essentials for roof support, (k) Bad practices resulting in fatals, (l) Responsibility for roof fall accidents, (m) What mine management can do to prevent accidents from fall of roof and coal, (n) What the mine foreman can do to prevent accidents from falls of roof and coal, (o) Factors affecting falls of roof and coal, (p) Methods used by some companies in reducing roof-fall accidents, (q) Conclusions, (r) Showing of moving pictures and (s) Discussion of questions.

This course could also include a study of the state mining law, the safety rules and standards of the



Regular safety talks reduce accidents



Community conditions have definite bearing on miner's safety consciousness

company, as well as a study of the Federal Mine Safety Code.

Safety Instruction Course

We recommend the adoption of a course in safety instruction for mine workers patterned after the one prepared by the U. S. Bureau of Mines but modified to suit the conditions at each mine. The Bureau of Mines course is subdivided into seven sections with titles similar to those in the course of training for mine officials. The textual matter naturally differs from that for mine officials, but such training, which we recognize must be on a voluntary basis, should be helpful in promoting safety education among the workmen, even if the course is taken by but a small percentage of the mine workers.

Such instruction could be limited to the phases of operation that the management feels should have special emphasis or it could be as inclusive and in the same detail as contained in the Bureau outline.

The cooperation of the mine workers is essential to any safety program, and because of the community of interest that exists between the men and the management in accident prevention, it should not be difficult to get the support of the mine workers in establishing a course in safety instruction.

Safety Incentives

Training, rules, posters, etc., point out accident hazards but in the final analysis, accidents must to a large extent be prevented by the men themselves, and after they have been taught what to do, some plan is often needed to provide an incentive for putting into effect the safe practices they have been taught.

It would seem that the prevention of injuries and possible loss of life would be sufficient rewards to insure safe methods of working, but unfortunately that is not always true, and something more positive or tangible is needed. Various forms of incentives are used by many companies in the way of bonuses and awards. This, however, is a subject for a report in itself and will be considered later by the committee.

Safety Education for Schools in Mining Communities

This opens a rather broad field, and one that offers real possibilities for accident prevention. To "sell" the children of a community on the promotion of safety ideas is to create a great influence for good as children are natural crusaders. But there is a still further advantage; "as the twig is bent so is the tree inclined," and ideas accepted by the boy will be retained by the man he later becomes.

In some coal mining communities, the school authorities, with the assistance of coal company officials, have introduced coal mining courses in high schools. Underground trips have been arranged as part of the training, and at times the school children are addressed by the officials of the coal companies.

General

Safety education can also be promoted by the maintenance of attractive bulletin boards inside and outside the mine on which would be posted:

Report of accidents—Safety bulletins and posters — Letters — Reports of accident prevention progress—Accident and other statistics —Recognition of good accident records of mines and individuals—Safety rules which management may want to emphasize from time to time,—and many other matters which contribute to the safety education of the men.

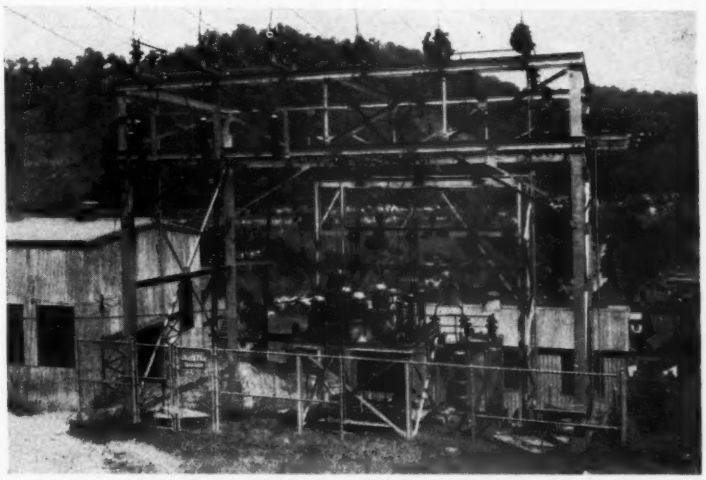
There should be regular safety meetings or conferences, either inside the mine or at some suitable place on the surface, where information on accident prevention is disseminated. At some mines, group safety meetings are held by the section foremen once each month inside the mine on the sections where the men work. Such meetings are followed by monthly general safety meetings on the surface for each the day and night shift men.

Previous mention has been made of the adoption of adequate safety rules and standards for the instruction and guidance of the men in carrying out their work. These rules should be kept in conspicious places at the mine. At some mines, the employment manager gives each new man, either a copy of the company safety rules applying to his particular job or a book containing all of the company safety rules. Other companies give each new man a personal note signed by the Safety Engineer, who, in an appropriate message, welcomes the new man as a member of the company's family of workers; also calls his attention to the company's safety rules and standards posted at the mines and particularly to the few special rules listed in the message applying to his particular job.

Public address systems are used effectively by the heads of the safety departments and others in broadcasting safety and other messages to the men while waiting for man trips or to the men at any other point where they may congregate.

District mining institutes contribute in a large measure to the safety education of supervisors, and they should be encouraged as well as supported by the industry. First aid and mine rescue training in some form should be included as a part of any program of safety education.

Vocational training for mine workers, who aspire to supervisory positions, is being carried on probably more generally now than at any time in the past. Such training, which is a morale builder as well as educational, should be developed as far as practical.



Transformer stations should be well protected

Conclusion

In presenting this report the committee wishes to re-emphasize two points. First, the purpose here has been to outline broad principles of education rather than to recommend details of procedure. Second, the subject of safety education has so many phases that this outline has not attempted to cover all possible avenues of approach. Further study is recommended both by the Committee and by the industry.

When this huge bucket bites into rock and dirt, it lifts away a 30-cubic-yard load—to uncover the rich supply of coal that lies *near the earth's surface*. For not all coal is mined deep underground, as you might suppose. In a single year as much as 135,000,000 tons of quality coal has come from surface mines like these.

To uncover this rich supply of home and industrial fuel, the progressive coal industry has introduced many revolutionary machines and methods. Giant shovels—today costing as much as $850,000 apiece—are only single items in this new phase of mining. And under the ground, as near the surface, coal mining represents new strides in mechanization of a basic American industry . . . in which a half-billion-dollar modernization program over the next three years alone gives assurance that American homes and industry will not lack for ample supplies of fuel.

Mechanization of America's progressive bituminous underground coal mines—in which more than 91% of production is mechanically cut and 60% is mechanically loaded—is evidence of the vast technical skill behind America's coal production records.

Today's mines themselves—as well as their rail and conveyor belt systems, and efficient coal treating plants for preparing coal for shipment—are carefully planned for safety, productive efficiency, and maximum conservation of coal's resources. Today coal mining is an increasingly attractive and satisfying field for young men with engineering talent and skill.

BITUMINOUS COAL

BITUMINOUS COAL INSTITUTE
A DEPARTMENT OF NATIONAL COAL ASSOCIATION
WASHINGTON, D. C.

BITUMINOUS COAL . . . LIGHTS THE WAY . . . FUELS THE FIRES . . . POWERS THE PROGRESS OF AMERICA

Now . . . after more than two years of actual field performance,

CARSET JACKBITS have proved that they can boost tonnage 20% or better and increase drilling speeds 50% or more!

No Matter How Hard The Rock, you can drill it faster, easier and cheaper with Carset Jackbits. Here are some of the reasons why—all of them advantages that you can prove to your own satisfaction, on your own jobs.

CARSET JACKBIT FEATURES

- Carset Jackbits wear longer
- Drill faster, 50% or more
- Boost tonnage, 20% or better
- Eliminate tapered holes
- Save up to 30% on dynamite
- Reduce air consumption at least 40%
- Permit use of longer steel changes
- Drill full steel changes without binding
- Permit use of lighter drills
- Practically eliminate bit changes
- Reduce maintenance costs, 30% or more
- Eliminate need for much shop equipment
- Drill the hardest and toughest rock
- Finish more rounds per month

No wonder that operators call the Carset Jackbit

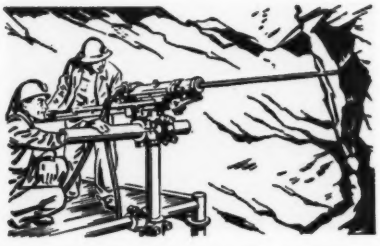
"the greatest single advance in rock drilling since the invention of the Jackhamer"

(see following pages)

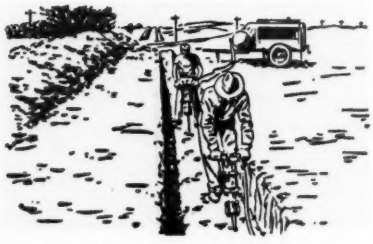
RESULTS LIKE THESE WITH CARSET JACKBITS MEAN ONLY ONE THING:

a Complete

rock drillingp

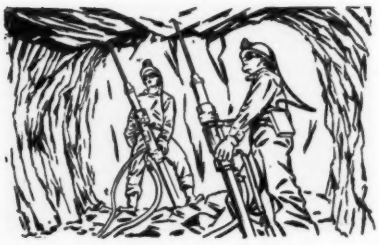


SAVED $92.69 PER FOOT OF DRIFT. In driving a 12 x 20 foot 97-hole heading in taconite, a mining company required an average of 49.8 hours to pull a 5-foot round. With CARSET JACKBITS they pulled 6½-foot rounds and cut this time to 18.5 hours. Accurate cost records showed a direct saving of $92.69 per foot of drift, or $602.48 per round.

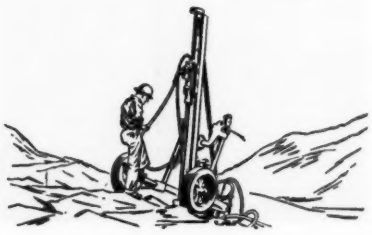


SAVED 65% ON BIT COST PER FOOT OF HOLE. On a large sewer project a contractor encountered tough drilling in hard, dense basalt. Steel bits used with J-50 Jackhamers averaged 1 foot of hole at a bit cost of 15 cents per foot. He now averages 260 feet per CARSET JACKBIT and bit cost per foot of hole is only 5¼ cents—a saving of 65% on *bit costs alone*.

SIXTY PERCENT MORE PLUG HOLES PER DAY. In drilling large boulders for blasting in an open pit operation, Jackhamer operators increased drilling speed from 4 inches per minute with steel bits to 10 inches per minute with CARSET JACKBITS. This combination of higher drilling speed and the saving of time previously lost changing bits, resulted in 60% more plug holes per day.



REDUCED BIT AND ROD COSTS 40% PER TON OF ORE. A mining company using conventional steel bits with 98-lb. Stopehamers, reports that their cost of steel bits and rods was 46.4 cents per ton of ore. With CARSET JACKBITS, the cost was 27.8 cents—a direct saving of 40% in bit and rod costs. Additional savings were made in air consumption, drill maintenance, and man-hours.



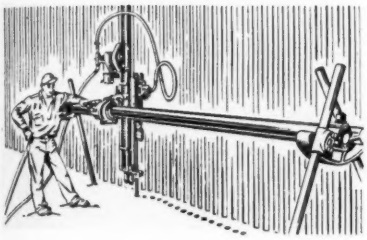
COULD HAVE SAVED $75,000 TO $100,000. A contractor on a dam project was drilling 18-foot holes in 66 minutes, with wagon drills and steel bits. With CARSET JACKBITS, he drilled 24-foot holes in 22 minutes—stepping up footage from 120 to 261 feet per shift. He said "If I'd had CARSET JACKBITS at the beginning of this job, I would have saved $75,000 to $100,000.

DRILL 300 FEET IN "6" ROCK." In a quarry, production costs were very high, due to extremely hard trap rock. This customer, using 45 lb. Jackhamers, reports that they required 4 steel bits for a 2-foot change. Now, with CARSET JACKBITS, he is averaging over 300 feet per bit! Rod life and drilling speed have been greatly increased and drill maintenance costs reduced.

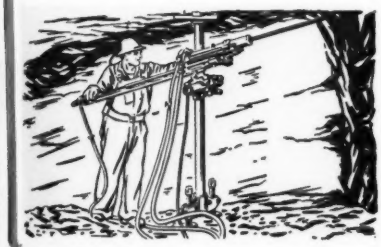
No matter how hard the rock, you can drill it faster, easier and cheaper with

Revolution in

performance and costs!



RECONDITIONING COSTS PRACTICALLY ELIMINATED. A granite quarry previously using steel bits, found it necessary to run bit reconditioning equipment two 8-hour shifts per day. Now, with all drilling done by CARSET JACKBITS, this operation has been almost eliminated. The management has also cut out one drill altogether because the drilling speed was so much greater.



MINERS DRILL AND BLAST ON SAME SHIFT. A mining company, drilling in a very hard quartzite, reports that CARSET JACKBITS have completely revolutionized their mining procedure. Miners now put in their rounds so fast that they can blast on the same shift. With steel bits, blasting previously had to be done on the second shift. This customer has converted to CARSET JACKBITS 100%.

Long before the first CARSET JACKBIT appeared on the market, years of factory research and testing had proved what it could do. Results, even in the early development stage, were almost unbelievably good when compared to the performance of conventional steel bits.

Yet, today, these results have been far surpassed in the field. Today CARSET JACKBITS are out-lasting steel bits by 50 feet-to-one, 100-to-one, and in many cases by as much as 400-to-one!

These are **proven facts**—established beyond question by mining and construction operators who have been using CARSET JACKBITS on their own jobs, under their own widely varying conditions. In the opinion of these operators, the new I-R Super-bit has completely revolutionized the business of rock dilling.

On these pages, for example, are specific reports which typify the experience of hundreds of users. As more and more of these reports come in, it becomes evident that the CARSET JACKBIT will eventually make obsolete practically all steel bits— including most of our own. That means a revolution in our business as well as yours. But why not? Ingersoll-Rand has always sought to replace good products with still better ones. And the CARSET JACKBIT has **proved** to be a better product—radically better. That's why we have put it into full production—in a wide range of sizes to meet every rock drilling requirement.

manufactured exclusively by

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y.

with Carset Jackbits

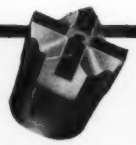
CARSET JACKBITS are now available in a complete range of sizes for practically every drill and hole size.

The following CARSET JACKBITS will meet the requirements of practically every rock drilling job. Because there is no appreciable gauge loss, one bit size is all that is needed for any given application. With the exception of Quarrymaster Bits (which have side holes only) all CARSET JACKBITS have both center and side holes.

1⅜"

1 ⅜" 11XCS4

1¾" dia., for Series 11 Jackstud. For use with Jackhamers as well as small-bore drifters Ideal for plugging and general small-hole drilling.



1¾"

1 ¾" 15XCS4
1 ¾" Ty1XCS4

1¾" dia., for Series 15 Jackstud and Type 1 Attachment. General-purpose bits for use with Drifters up to 3½" bore, Wagon-Drills, Jackhamers and Stopehamers.

2¼"

2 ¼" Ty3XCS4

2¼" dia., for Type 3 Attachment. For the heaviest duty service, with 4" wagon drills and drifters, where 2¼" bottoming size is required. Also for blast hole drilling with Type 2 coupled steel.

1½"

1 ½" 13XCS4

1½" dia., for Series 13 Jackstud. For use with all drills up to and including 3" bore machines.

1⅞"

1 ⅞" 15XCS4

1⅞" dia., for Series 15 Jackstud. General-purpose bits for use with Drifters up to 4" bore. Wagon-Drills, Jackhamers and Stopehamers. This bit can be used instead of the 1¾" size when extra chip clearance is required.

1⅝"

1 ⅝" 13XCS4
1 ⅝" 15XCS4

1⅝" dia., for Series 13 and Series 15 Jackstuds. The series 13 bit for use with all drills up to and including 3" bore machines. The series 15 bit for use with all drills up to and including 3½" bore machines.

2"

2" Ty2XCS4

2" dia., for Type 2 Attachment. For the heaviest duty service, with 4" wagon drills and drifters. Also for blast hole drilling with Type 2 coupled steel.

5¼"

5 ¼" QMX2S4

5½"

5 ½" QMX2S4

5¾"

5 ¾" QMX2S4

6"

6" QMX2S4

CARSET BITS are available in four sizes for use with the QUARRYMASTER DRILL. These machines are revolutionizing drilling procedure in quarries, strip mines and heavy construction work.

FOR THE COMPLETE STORY

Ask for our comprehensive pocket size catalog No. 4091. It tells the entire story. It contains numerous case histories and many helpful hints on how to get the most out of CARSET JACKBITS.

Ingersoll-Rand Company
11 Broadway, New York 4, N. Y.
Dept. RD-10

.... Please send me CARSET JACKBIT Catalog No. 4091

.... Please have CARSET JACKBIT representative call.

NAME.....

POSITION.....

COMPANY.....

STREET .....

CITY..... STATE.....

6

You can use CARSET JACKBITS with the new I-R **Jackstud Attachment** or with your present **Type 1, 2 and 3 Attachments**

Jackstud Attachments permit the use of superior nickel alloy drill steels. I-R Spec. No. 139. Operators report from 50 to 200% longer rod life. Jackstuds are available in Series 11, 13 and 15—with 11/16, 13/16 and 15/16 inch thread diameters respectively.

You can also use CARSET JACKBITS with your present Type 1, 2 and 3 Attachments (I-R threaded drill steel connections), which are giving such excellent service the world over. The performance of these rods with CARSET JACKBITS is even better than with steel Jackbits.

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, NEW YORK

FORM 4095

WHEELS OF GOVERNMENT

As Viewed by A. W. DICKINSON of the American Mining Congress

BADLY DELAYED by the "civil rights" filibuster, which ran from February 28 to March 18, the Senate is working long hours on a crowded calendar. The Southern filibuster was precipitated by a motion to bring up a resolution under which debate could have been shut off by a two-thirds majority of those Senators present at any time; hence if a bare quorum of 49 Senators were present, the two-thirds rule could have been invoked by as few as 33 Senators. In the final disposition of the controversy a Constitutional two-thirds majority vote of the total Senate membership of 96 is required to shut off debate.

Prolonged Senate consideration of rent control and the Economic Cooperation Administration (Marshall Plan) authorization has still further delayed the schedule, with the result that Majority Leader Lucas has told the Senate that Congress may have to return after the statutory adjournment date of July 31 or the President may be asked to call a special session.

Tax

While the Administration continues to call for an increase in taxes, Chairman Walter George (Dem., Ga.) of the Senate Committee on Finance remains firm in his position that Congress should delay any action on tax legislation until early 1950. Recently in debate on the ECA appropriations Senator George declared that "the one thing we ought to do now" is to reduce taxes instead of raising them. He then warned Congress to hold down appropriations and to keep closely in touch with the status of Federal finances. When the proper time comes for a revenue bill he is prepared to call for increasing the exemptions for single persons to $1,000 and married persons to $2,000; allowing "some credit" on dividends actually distributed; applying a special rate to corporate earnings not in excess of "some fixed amount," to aid small business; and treating all partnerships, at their option, as corporations for tax purposes.

Social Security

Following the close of hearings March 22 on the Administration bill, discussed in the March JOURNAL, which would give relief to all needy persons and expand financial aid to States, the House Committee on Ways and Means is currently hearing testimony on a second bill which would extend and liberalize old age and survivors' insurance benefits and broaden the coverage of the present Act.

Social Security Commissioner Altmeyer testified that the Administration's program is to bring 50,000,000 workers under social security; double old age and survivors' insurance benefits; create a new insurance program for disabled workers; and reduce from 65 to 60 years the age at which women become eligible for benefits. He stated that the cost of the program may run as high as $20,000,000,000 a year by the year 2000 and may consume 12.4 percent of the nation's payrolls.

Trade Agreements

The bill extending the Reciprocal Trade Agreements Act until June 12, 1951 is now on the Senate calendar and will be subject to debate in the near future. The measure was reported by the Senate Finance Committee without change and restores the Act to its pre-80th Congress basis. It is interesting that several majority members of the Committee have reserved the right to support amendments on the Senate floor and that Senator Ed Johnson (Dem., Colo.) has reserved his right to oppose the entire bill. There is a chance that the Senate may accept the amendment originally offered by former Senator Bailey of North Carolina in 1945, which would exclude strategic and critical materials from further duty cuts under the Act. This amendment has been strongly urged by the American Mining Congress as a means of preserving domestic production of strategic and critical metals and minerals for the national security.

Meanwhile, on March 31, the bill suspending the import excise tax on copper until June 30, 1950 was approved at the White House.

Labor Legislation

Senate floor consideration of the Administration's labor bill is still some weeks away, but in the House the Rules Committee is expected to send a duplicate measure to the House floor with an open rule permitting amendments. A House coalition of Southern Democrats and Republicans is prepared to make a determined effort to substitute a bill introduced by Representative Wood of Georgia for the Administration measure.

Washington Highlights

CONGRESS: Legislation jammed by Senate delays.

TAX: Senator George calls for cuts in 1950.

SOCIAL SECURITY: Prolonged hearings on Administration program.

TRADE AGREEMENTS: Senate floor battle ahead.

LABOR BILL: Substantial amendments probable.

WAGE-HOUR: House Committee reports 75c minimum.

BASING POINT: Moratorium in prospect.

MINE INCENTIVES: Additional hearing scheduled

COAL STRIKE: Aids T-H Act adherents.

The Wood bill provides changes in the Taft-Hartley Act to: remove the union shop election requirements; remove the "last offer" ballot on national emergency strikes; require employers as well as union officials to sign anti-Communist affidavits; authorize the President to use injunctive power in national emergency strikes or threatened strikes before receiving a report from a Board of Inquiry; drop the provision for the Congressional Joint Labor-Management Committee; clarify the free speech provisions to prevent the NLRB from invalidating elections because of alleged coercion; make unions responsible for lost wages resulting from unfair labor practices committed by them; and eliminate use of the check-off as applied to initiation fees, fines, and special assessments.

During House Labor Committee hearings on the Administration bill Secretary Conover of the American Mining Congress told the Committee that it omits the following provisions of existing law which are of the highest importance to sound industrial relations; adequate protection against Communism in labor unions; the guarantee of free speech in collective bargaining negotiations; the exclusion of supervisors from the definition of "employes"; equal obligation on management and labor to bargain in good faith; protection of the right of men to work; retention of the independent status of the Federal Mediation and Conciliation Service; separation of the prosecuting and judicial functions of the NLRB; and adequate protection against national emergency strikes. He also urged amendment of existing law to remove central union welfare funds from the field of required bargaining.

Wage-Hour

Although the House Labor Committee on March 17 reported a Wage-Hour Amendments bill carrying an increase in the minimum wage from 40c to 75c an hour, this bill too is expected to be given an open rule which will permit amendment on the floor of the House. It is generally expected that the minimum wage will finally be set at around 65c. The bill defines "regular rate of pay" and bans overtime-on-overtime, and transfers authority for administration of the Act to the Secretary of Labor, with rule-making powers and authority to sue for back wages on behalf of employes.

Exempted from the "regular rate of pay" are sums paid as gifts the amounts of which are not measured by or dependent on hours worked, production or efficiency; payments made for occasional periods when no work is performed due to holiday, vacation, illness, failure of the employer to provide sufficient work; payments for travel expenses; bonuses; employers' pension contributions; true overtime payments; premium pay for Saturdays, Sundays or holidays; and premium pay for work at undesirable hours. A further amendment makes premium pay for Saturdays, Sundays, holidays, or for the sixth and seventh days of the workweek, creditable toward the statutory overtime compensation even though work on such days takes place prior to the fortieth hour in the workweek.

The House-approved overtime-on-overtime bill is still in a Senate Labor subcommittee, following hearings held earlier this month. Originally the measure covered only the longshore, stevedoring, building and construction industries but it is now expected that a bill will be reported to the Senate covering all industries and applying retroactively.

Basing Point

A Senate Judiciary subcommittee closed three days of hearings April 1 on a bill by Senator Myers (Dem., Pa.) which provides a two-year moratorium on any new Federal Trade Commission cases against industry for "good faith" freight absorption. Strongly supported by industry witnesses, the measure is not opposed by the Department of Justice, which has sent a letter to the subcommittee stating that it has "no serious objection to a reasonable moratorium period." The Department suggested that the moratorium be limited to July 1, 1950. A similar bill by Representative Walter (Dem., Pa.), which provides a 16-month moratorium, is now on the House calendar.

The Supreme Court is expected to hand down a decision in the next few weeks in the rigid steel conduit case, in which a Federal Trade Commission order appears to bar absorption of freight to meet competition in distant markets.

Incentive Payments

Interior Secretary Krug is scheduled to appear before the House Public Lands Mines and Mining subcommittee April 7 to testify on mine incentive payment legislation. Subcommittee Chairman Clair Engle (Dem., Calif.) states that the Interior Department has submitted a proposed bill which "is simply the mining portion of the Spence bill, known as the President's Economic Stabilization program." Concerning the Spence bill, Engle declared that "all Congressional comment has been unanimous that such legislation would never be reported out of Committee and would never pass the House." Previously Assistant Secretary of Interior C. Girard Davidson had appeared before Engle's subcommittee and testified that, if enacted, the Spence bill "would provide the basis for a mining program which would be of great assistance to the mining industry. It would in our opinion accomplish the objectives which we seek, except for exploration subsidies, much better than the proposed minerals subsidy legislation under discussion here."

Later, in an executive session of the subcommittee, Bureau of Mines

(*Continued on page* 131)

WHY DIDN'T YOU WAIT UNTIL WE HAD REPEALED THE TAFT-HARTLEY ACT?
LABOR AND PUBLIC WELFARE COMMITTEE
"And there shall be a director of the Bureau of Mines ..... who shall be appointed by the President, by and with the advice and consent of the Senate" and John L. Lewis

—The Evening Star

OVER 250,000 FEET NOW RENDERING SATISFACTORY SERVICE

- **KING KOAL underground CONVEYOR BELTING was developed and is being manufactured by Hamilton Rubber Mfg. Corp., to keep pace with the advent of underground conveyor belt systems.**
- **In every KING KOAL BELT is incorporated the essential qualities for economical conveying of coal with the positive assurance of long and uninterrupted service.**
- **For the ultimate in coal mine conveyor belting, specify KING KOAL CONVEYOR BELTS by**

We will gladly submit a sample upon request.

VISIT OUR EXHIBIT

Booth No. 1466

Coal Convention and Exposition

THE AMERICAN MINING CONGRESS

Cleveland, Ohio

May 9th to 12th

HAMILTON RUBBER MFG. CORP., Trenton, N. J.

MANUFACTURERS OF QUALITY RUBBER PRODUCTS FOR OVER 70 YEARS

THE LARGEST COAL CLEANING PLANTS OF THE WORLD ARE EQUIPPED WITH THE... CHANCE SAND FLOTATION PROCESS

Chance equipped cleaning plants with feed capacities of 3500 tons per hour are in operation—no other type of coal cleaning plant, built-or-building, has this capacity.

THE HEART OF [illegible] PREPARATION PLANT

United Engineers & Constructors Inc

NEW YORK 17 • **PHILADELPHIA 5** • CHICAGO 2

The CLARKSON

THE LOWEST LOADING MACHINE ON WHEELS

TYPE 24 BB *Redbird*

- Quick operating hydraulic controls conveniently located in one central unit.
- Telescopic hydraulic jack adjustable to any car height — with oversize cylinders for low hydraulic pressure.
- *Rear conveyor* ELEVATED IN ONE SECOND *to meet any car height. Conveyor in* TRAVELING POSITION WELL BELOW TROLLEY WIRES *even in very low coal — highest point of conveyor pan only 23 inches from rails.*

The CLARKSON MANUFACTURING CO.
Nashville
Illinois

POWER
TO PRODUCE PAYDIRT

How does an International Diesel engine help you dig that paydirt?

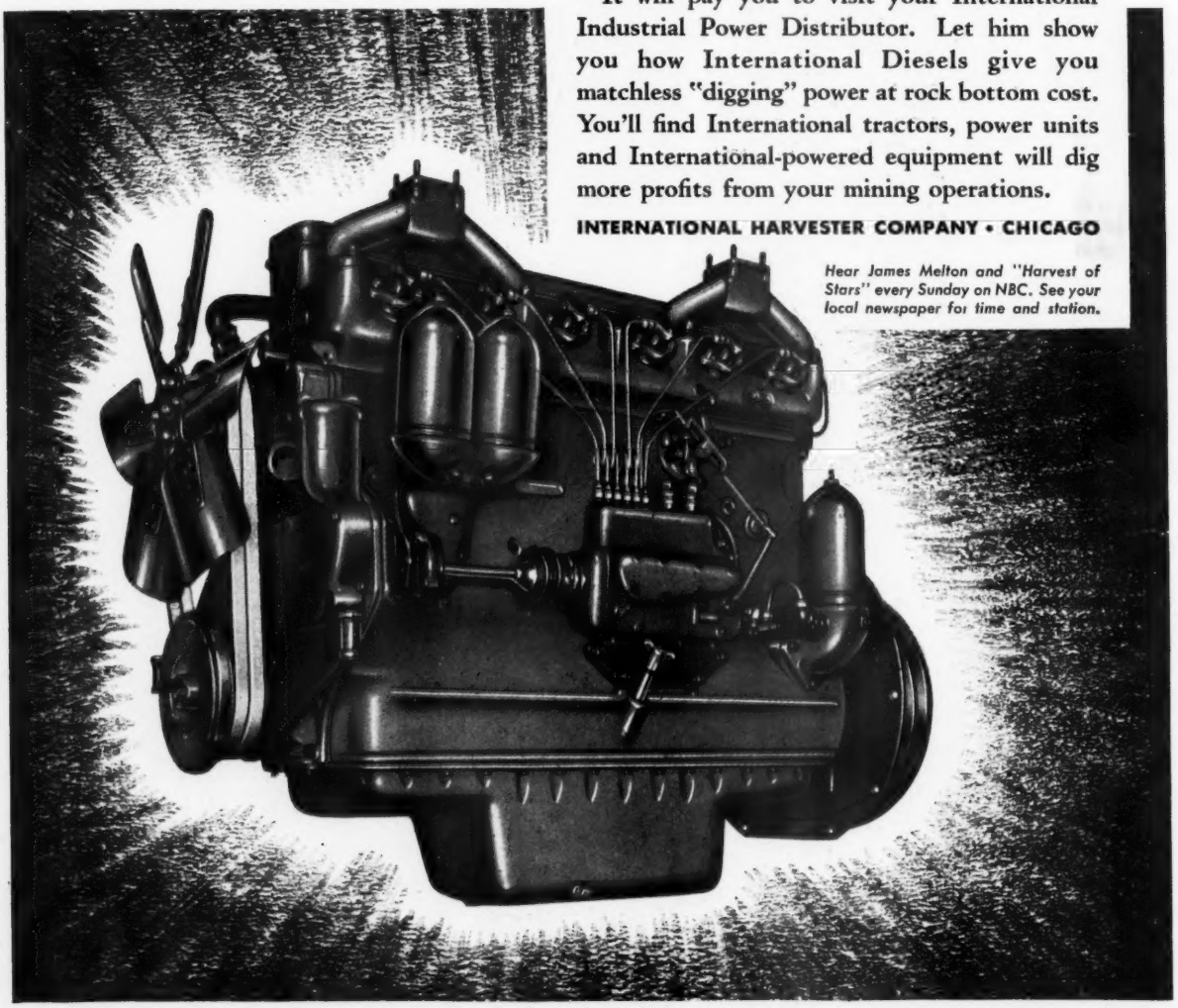
In rugged International Crawlers, they give you the power to strip away overburden. In draglines, cranes and shovels, they furnish the power to dig and lift. In compressors, pumps and generator sets, they drive the vital auxiliary units for mining operations.

Yes, International Diesels give you money-saving "digging" power. No other diesels provide all the features for easy, economical, efficient operation that you get in Internationals.

It will pay you to visit your International Industrial Power Distributor. Let him show you how International Diesels give you matchless "digging" power at rock bottom cost. You'll find International tractors, power units and International-powered equipment will dig more profits from your mining operations.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

Hear James Melton and "Harvest of Stars" every Sunday on NBC. See your local newspaper for time and station.



STANDARDIZE ON POWER THAT PAYS

INTERNATIONAL HARVESTER

CRAWLER TRACTORS • WHEEL TRACTORS • DIESEL ENGINES • POWER UNITS

INTERNATIONAL
INDUSTRIAL POWER

You Are Cordially Invited

to Visit

⁂

CLEAN COAL HEADQUARTERS

⁂

Booth 512

⁂

American Mining Congress
1949 COAL SHOW

Cleveland, May 9-12

⁂ ⁂ ⁂

Designers and Constructors of Chance Sand Flotation for Wet Cleaning and American Pneumatic Separator for Dry Cleaning

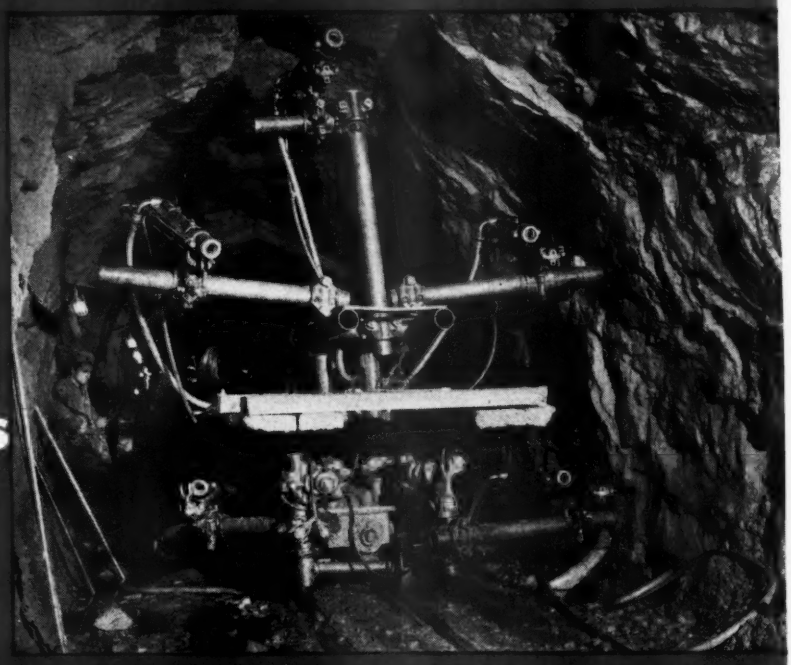
⁂ ⁂ ⁂

FAIRMONT MACHINERY COMPANY

FAIRMONT, W. VA.

GARDNER-DENVER CALLS THE ROLL

OF AMERICA'S BIGGEST TUNNEL JOBS



Gardner-Denver CF 89H Drifter

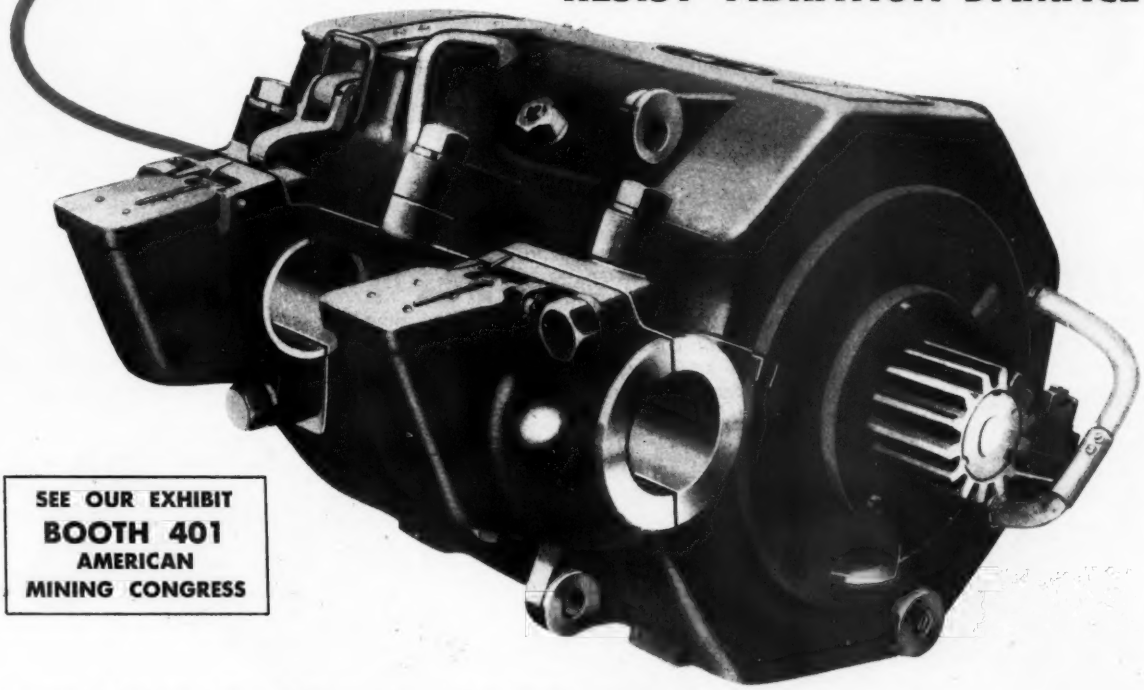
Wherever they are . . . in whatever type rock . . . tunnels get drilled faster—and at lower cost—when you use Gardner-Denver Continuous Feed Tunnel Drills. That's why these drills are preferred on so many tunnel projects all over the country. *Fast*—the drill feeds itself exactly in accordance with the character of the ground—requires no manual adjustment. Maintenance costs are lower, too. The built-in feed motor dampens vibration—is easy on the set-up, extremely low in air consumption.

For complete information, write Gardner-Denver Company Quincy, Illinois

GARDNER-DENVER SINCE 1859

Welded by National—

YOUR MINE LOCOMOTIVE FIELD FRAMES RESIST VIBRATION DAMAGE



SEE OUR EXHIBIT
BOOTH 401
AMERICAN MINING CONGRESS

More than half of the failures which occur in mine locomotive motors are from mechanical, rather than electrical, causes. Mechanical failures develop most often from misalignment and a lack of rigidity.

The split field frame is particularly subject to vibration and misalignment. It was designed for convenience of repair, but it increased the burden of maintenance tremendously.

At Bluefield, West Virginia, and Grundy, Virginia, we have shops especially equipped to weld old-type split field frames into solid box-type frames. Combined with preventive maintenance—rebuilding motors at pre-determined intervals based on ton miles of service—average maintenance costs can often be just about cut in half. Our Bluefield and Grundy shops are experienced in all phases of mine locomotive maintenance, redesign and repairing.

Welding insures unchanging air gaps. Continuity of the magnetic circuit is made certain. Ball bearing failures are reduced. All in all, length of life is increased, possibility of sudden failure is reduced.

As each motor needs maintenance work, let National build *real* service into it—and start it on a preventive maintenance schedule.

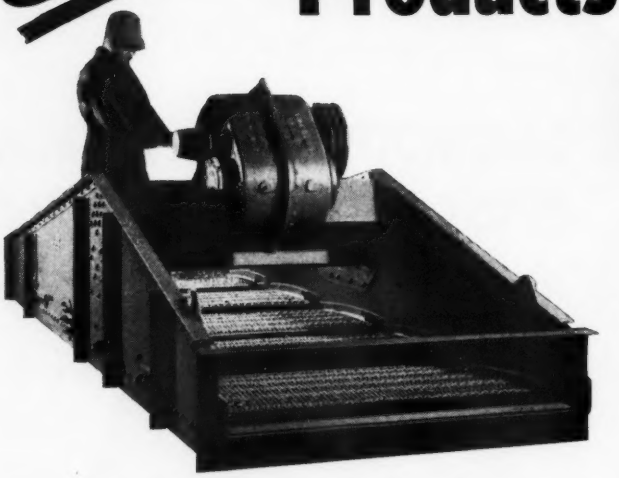
Wherever you are our nearby Field Engineer is available

AT GRUNDY, VA., ADDRESS NATIONAL ELECTRIC SERVICE CORP.

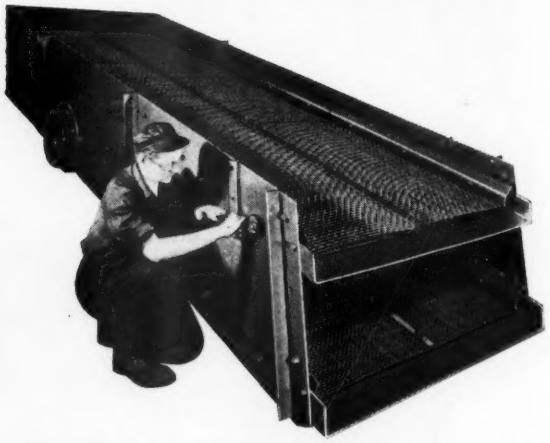
NATIONAL ELECTRIC COIL COMPANY

COLUMBUS 16, OHIO — BLUEFIELD, W. VA.

See Allis-Chalmers Products at Coal Show

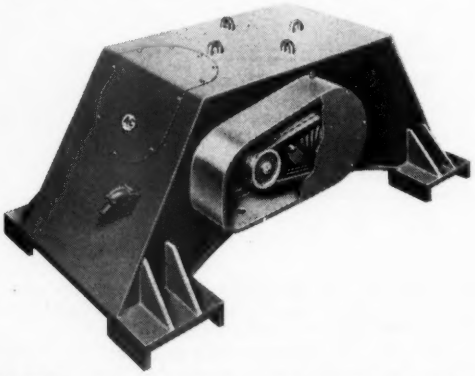


SEE A full-size 6 by 16 ft single deck *Low-Head* vibrating screen with reverse end-tension deck . . . the coal screen designed for high dewatering efficiency. Allis-Chalmers deck arrangement turns fine coal over repeatedly, assuring free drainage and eliminating a closely packed bed with fines on bottom and coarse coal on top.



SEE 5 by 12 ft *Ripl-Flo* vibrating screen — the screen that gives you high capacity for sizing egg, range, stoker grades. Available in heavy-duty construction for screening ROM coal in sizes up to 22 in. Has only two bearings — less weight, maintenance, power requirement. Sizes 3 by 6 to 6 by 16 ft.

SEE The *CW Solids-Handling* pump — designed by Allis-Chalmers especially for coal washing! CW pump has only five working parts which can be removed easily. Handles slurries, tailings, sludges having up to 40% solids in suspension. *Allisite* parts give high abrasion resistance. 175 to 8,000 gpm; heads to 140 ft.



SEE *New* Car-Shaker for emptying coal from all sizes of hopper bottom cars quickly and safely. Shaker body is "stress-relieved" for uniform strength. Vibrating mechanism is eccentric shaft mounted in large lubricated bearings and driven by 15 hp motor and Texrope drive inside shaker body.

Low-Head, Ripl-Flo, Texrope, Allisite are Allis-Chalmers trademarks

ALLIS-CHALMERS, 972A SO. 70 ST.
MILWAUKEE, WIS.

OTHER ALLIS-CHALMERS PRODUCTS FOR COAL . . .

Texrope V-belt drives . . . Electric Motors and Gearmotors . . . Multistage Mine Pumps . . . Transformers . . . Mobile Unit Substations . . . Complete line of Power Generation, Distribution and Control Equipment.

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

A-2670

Personals

A. B. Crichton, Johnstown Coal & Coke Co., and **Barton R. Gebhart,** Chicago, Wilmington & Franklin Coal Co., were recently appointed by Secretary of the Interior Krug to the National Bituminous Coal Industry Advisory Council. **H. G. Schmidt,** president, North American Coal Corp,. was elected by the Council to succeed Col. **R. P. Koenig,** Ayrshire Collieries Corp., as chairman. **Ezra Van Horn** was reelected as vice-president, and **Norman G. Schmidt** as secretary-treasurer.

Three standing committees were elected, headed by the following: **Col. Koenig,** agenda; **George H. Love,** appointment; and **Mr. Gebhart,** finance.

Fletcher W. Rockwell, chairman and a member of the board of the National Lead Co., recently announced his resignation from both posts. Mr. Rockwell was president of the company from 1938 to 1947. He is succeeded by **Joseph A. Martino,** now president, who continues as chief executive officer and chairman of the executive committee. Mr. Rockwell had 53 years of continuous company service.

Lindsay Cobb has been elected president of the Western Kentucky Mining Institute to succeed Andrew Roark who resigned recently. **A. L. Bishop** became first vice-president; **Charles Eli,** second vice-president; and **Edwin McGaw,** third vice-president.

Wilbur J. Guay is now metallurgist for Howe Sound Co., Holden, Wash.

R. R. Estill has been appointed general superintendent of the Fluospar Division, United States Coal and Coke Co. at Mexico, Ky. He succeeds **K. A. Johnston,** who has been transferred to the Construction Division, Lynch, Ky.

George McKereghan, formerly of the mining department of the Calumet and Hecla Consolidated Copper Co., has been transferred to the position of field engineer for Liddicoat drill bits. On his new post he will conduct demonstrations in mining locations throughout the 37 mid-western and eastern states in which the company is licensed to sell Liddicoat bits.

J. M. Treanor, vice-president and general sales manager of New England Coke Co., was recently elected vice-president of the Mystic Iron Works, sales company for pig iron made at Eastern Gas and Fuel Associates' blast furnace at Everett, Mass.

John Lucian Savage, internationally famous engineer, has been designated 1949 winner of the Washington Award, awarded annually by a joint committee of the AIME, ASME, ASCE, AIEE, and the Western Society of Engineers.

Walter L. Maxson, vice-president of the Oliver Iron Mining Co., Duluth, Minn., was recently appointed to the Atomic Energy Commission's Advisory Committee on Raw Materials. **Donald H. McLaughlin,** president, Homestake Mining Co., is chairman of the 11-member AEC Raw Materials Advisory Committee.

James C. Faith, Graham, Ky., has been appointed a district state mine inspector. His term will run to January 10, 1951.

R. J. Mechin is now with St. Joseph Lead Co. in New York City. He has been succeeded by **M. G. Jones** as manager of mining operations in northern New York state.

John M. Connor, Pittsburgh, Pa., has been elected vice-president of Allegheny Pittsburgh Coal Co., and vice-president and director of Windsor Power House Coal Co. In his new capacity he continues responsibility for all West Penn mining operations.

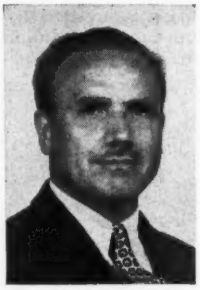
O. D. Niedermeyer has been appointed manager of the Texas Mining & Smelting division of National Lead Co. and director of the company's antimony smelting operations. He formerly managed National Lead's Mexican antimony mines.

D. H. McGeorge has been appointed vice-president and general sales manager of the C. L. Amos Coal Corp.

James Boyd being sworn in as Director of the Bureau of Mines, by Chief Clerk Floyd Dotson. Secretary of the Interior J. A. Krug looks on. The ceremony took place March 24. Serving under a series of recess appointments since August 1947, and without salary since December 1947, Dr. Boyd also received back-pay checks totaling $12,600

Sim W. Smith has been named superintendent of the Ruth open-pit mine of Kennecott Copper Corp., Ruth, Nev. He succeeds **Lou Meyer** who resigned.

P. R. Paulick, consulting engineer, Library, Pa., recently left for Japan to serve as special mining engineering consultant on General Douglas MacArthur's technical staff. This organization has been set up to determine the degree of rehabilitation possible for Japanese mines. The work will be under the auspices of SCAP. Mr. Paulick has had wide experience in the development and application of mechanical mining and served actively on the Conveyor Committee of the Coal Division of the American Mining Congress. He expects to return to the United States in about six months.



Gilbert C. Davis, director of labor relations, Phelps Dodge Corp., Douglas, Ariz., retired from active service with the company on March 1. He has been succeeded by **W. J. Uren**, the assistant director of labor relations since 1944.

E. F. Maurer has been appointed president and general manager of the Rail and River Coal Co. of Bellaire, Ohio. He succeeds the late John T. Sydnor.

J. J. Morsman has resigned as a member of the board of directors of National Lead Co. after 56 years of service.

Chester C. Cook, former executive vice-president and treasurer of the Sunday Creek Coal Co., was elected president and chairman of the board of directors at the annual meeting of the company.

Ralph B. Utt, general sales manager of Western Machinery Co., recently returned from an extended tour of mining properties in Europe and Africa, where he obtained the rehabilitation of mining operations made possible by the work of ECA.

Eugene H. Jones was honored recently as the outstanding mining engineer graduate at the University of Pittsburgh. He was presented with a gold watch by the Old Timers Club, an organization of executives in coal and affiliated industries. The presentation was made by **George H. Dieke**, president, Mine Safety Appliances Co.

Irwin H. Cornell, formerly vice-president and sales manager of the St. Joseph Lead Co., has been elected vice-president of the Cornell Iron Works, Inc., Long Island City, N. Y.

Alvin F. Franz has been promoted to executive vice-president of Colorado Fuel and Iron Corp. **Jay J. Martin** will succeed Mr. Franz as vice-president in charge of operations. Both will maintain headquarters in Pueblo, Colo.

Clarence Watkins is now general hill foreman of the open-pit, Utah Mines Div., Kennecott Copper Corp.

Arthur J. O'Connor, formerly general superintendent of Consolidated Coppermines Corp., Kimberly, Nev., has been appointed general manager, succeeding the late C. I. Cook.

Gyle B. Pyles, former superintendent of maintenance for the Oliver Iron Mining Co. in the Hibbing-Chisholm district of Minn., has been appointed assistant project engineer.

Harry J. Evans and **Richard A. Suppes**, mining engineers of Pierce Management, Scranton, Pa., left for Korea on March 9, to study economic potentialities of four coal fields in southern Korea.

W. C. Page has been appointed assistant general manager of western operations of U. S. Smelting Refining and Mining Co. Mr. Page will also continue supervision of the Midvale Plant operations and the refining operations of the company.

Donald H. McLaughlin of New York City and San Francisco has been appointed chairman of the National Committee of Sponsors of the Harvard Foundation for Advanced Study and Research.

—*Obituaries*—

Grant Stauffer, 60, a director of the American Mining Congress, and president of the Chicago Great Western Railway Co. and of many coal operating and selling concerns, died on March 31 in New York, after a long illness.

Mr. Stauffer, in addition to his railroad interests, directed mining properties in Alabama, Kentucky, Missouri, Kansas, and Illinois. He was president of Sinclair Coal Co., Hume-Sinclair Coal Mining Co., Huntsville-Sinclair Mining Co., and Sentry Coal Mining Co., and vice-president of Seneca Coal and Coke Co., and Marigold Coal Mining Co.

He was a director of the Stauffer Publications, publishers of a chain of newspapers and a director of the Business Men's Assurance Co., and the Commerce Trust Co., in Kansas City, where he made his home.

Mr. Stauffer, ever an active representative of the coal industry, will long be remembered for his staunch adherence to sound principles both in business relations and in government policies.

Harold Dainforth Baker, 64, president and treasurer of the Baker-Whildin Coal Co., Detroit, died on March 3.

William Gohl, 56, died on March 10, in Scranton, Pa. He was vice-president of the Pittston Co., Clinchfield Coal Corp., and the Davis-Clinchfield Export Coal Co., and president Pattison & Browns, Inc. A resident of Manhassett, Long Island, Mr. Gohl died while visiting Harry J. Connolly, president, Pennsylvania Coal Co.

E. C. Mattox, 68, formerly head of the Roundup Coal Mining Co., Roundup, Mont., died January 6 at Bozeman, Mont.

Robert McAllister, 72, for many years a safety official of the Colorado Fuel and Iron Corp., died in Pueblo, Colo., on January 7.

Prominent in western mining circles, as well as abroad, **Edward L. Sweeney**, a native of Tacoma, Wash., died recently at Flagstaff, Ariz. After graduation from the University of Washington, he worked in Alaska for the Kennecott Copper Corp. and later spent time in Australia, Newfoundland, and Turkey, for varied mining interests.

D. W. Marshall, pioneer in promoting flexible ventilation tubing, died at Lincoln, Ill., on March 5. For the past three years Mr. Marshall was sales manager for the American Brattice Cloth Corp., Warsaw, Ind.

Carl H. Fry, an outstanding mine safety leader, administrator of the Industrial Accident Commission of California, died recently after several years of ill health.

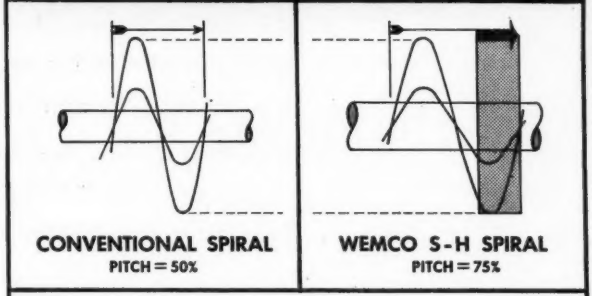
DESIGN MAKES THE DIFFERENCE

WEMCO S-H CLASSIFIERS

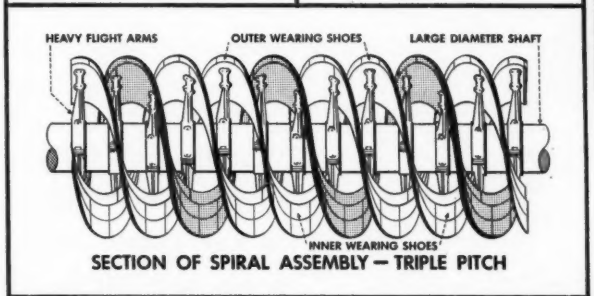
provide

GREATER CAPACITY

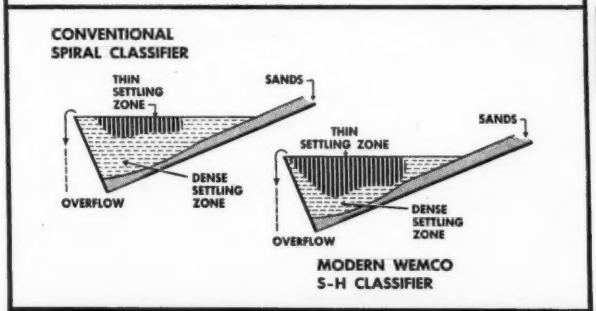
Up to 100% greater sand raking capacity, balanced with corresponding increase in overflow capacity.



1 FASTER SAND CONVEYANCE
because increased pitch of S-H design gives 50% greater lineal travel per revolution, with less slippage.



2 BIGGER LOADS
per revolution of spiral because increased pitch permits ***three*** spirals per shaft, hence 50% more conveying surface.



3 INCREASED OVERFLOW
because faster sand removal with less agitation of pulp assures larger thin-settling zone and prevents "sanding up," hence provide greater ***effective*** pool area.

The WEMCO S-H Classifier is specifically designed to establish balance between sand raking and overflow capacities. Thus, it will do the same job as other machines one size larger.

These results of progressive, modern design make WEMCO "Best in Classifiers."

Write for new descriptive bulletin or visit the WEMCO office nearest you.

WEMCO
WESTERN MACHINERY COMPANY
760-766 FOLSOM STREET · SAN FRANCISCO 7, CALIFORNIA

WKE (HMS) Mobil-Mill • Coal Spiral • Standard Thickeners (HMS) Thickeners • (HMS) Media Pumps • Hydroseparators (HMS) Densifiers • (HMS) Separatory Cones • "SH" Classifiers Sand Pumps • Conditioner and Agitators • Fagergren Flotation Machines • Dewatering Spirals • (HMS) Laboratory Units

PRINCIPAL OFFICES

Los Angeles • Sacramento • Salt Lake City • Spokane
Pocatello, Idaho • Denver • Phoenix • Chicago
Hibbing, Minnesota • Bartow, Florida • New York

EXPORT DISTRIBUTORS

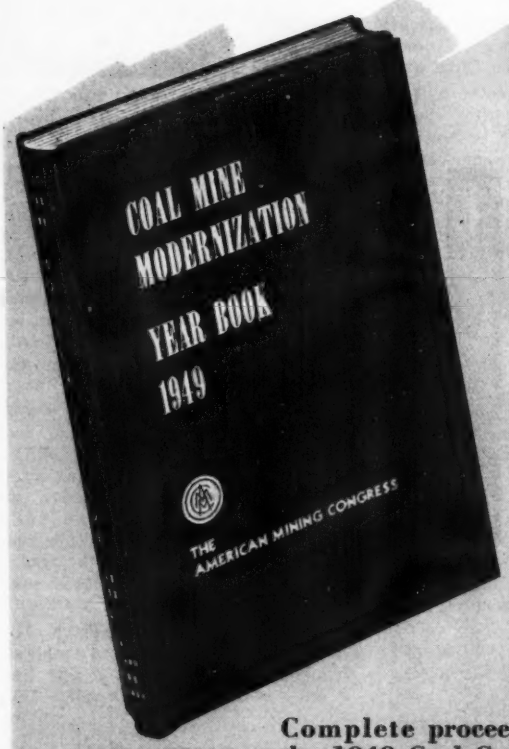
The Ore and Chemical Corporation
80 Broad Street • New York 4, N.Y.

Continental Europe and North Africa

Dr. Ing. Herbert Lickfett A/B, Stockholm 3, Sweden
Milieu Dense, Paris, France
Ferdinand Egeberg & Company, Oslo, Norway
Midec, Milan, Italy
A. Schubarth & Company, Basle, Switzerland
G. Maltisiniotis & Co., Athens, Greece
Agence Miniere & Maritime, S. A., Antwerp, Belgium
Adil Gabay & Albert Koenka, Istanbul, Turkey

Order Now

COAL MINE MODERNIZATION YEAR BOOK



Complete proceedings of the 1949 Coal Convention and Exposition at Cleveland. May 9-12.

. . . all the papers and discussions presented at this nation-wide gathering of the coal mining industry, looking to continued progress in the mechanization and modernization of mining operations.

. . . the best thinking of progressive mining men on the latest developments and trends in machines, equipment and methods and management.

Reserve your copy of the 1949 edition now!

$3.00 per copy (10 or more copies—$2.75 each).

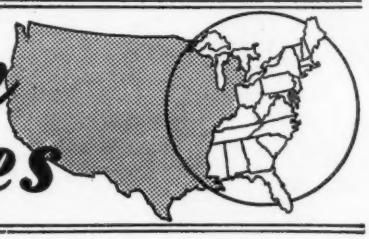
COAL MINE MODERNIZATION YEAR BOOK

Published by The American Mining Congress

1102 RING BUILDING • **WASHINGTON 6, D. C.**

NEWS and VIEWS

Eastern States



Mining Concern Sells Houses

Consolidation Coal Co. (Ky.), announced that it completed the sale of all its houses in Jenkins, Ky., a town of 10,000 population. Jenkins has been the largest "company" town in Kentucky, and one of the largest in the United States. The company now owns only its main office building, an immense coal cleaning plant, and other plant buildings.

Within two years the town of Jenkins has undergone transformation as the company divested itself of public and private properties and reverted to its primary business of mining coal.

Engineers Wanted

The U. S. Civil Service Commission has been accepting applications for a mining engineer examination; however, vacancies still exist. The Commission wishes to bring this examination to the attention of qualified persons. No written test is required.

Application forms may be obtained from the U. S. Civil Service Commission, Washington 25, D. C., and must be filed no later than June 30, 1949.

Washing Plant Completed

Republic Steel Corp. has completed construction of a new coal washing plant in Russellton, Pa. The new plant will process all coal mined at Republic's Russellton mine and its Indianola mine located near the Freeport Seam area.

As a result of this construction, Republic's extensive Ohio steel-making operations will be greatly improved, and will provide more uniform quality coal and permit better blast furnace operations. The plant will handle 450 tons of raw coal per hr. About 6000 tons of washed coal are shipped per day. About 20 percent of the weight of the raw coal is removed by washing.

Republic also operates coal washing plants at its Clyde and Banning mines south of Pittsburgh and at its Republic Kentucky mines. All coal produced in Republic's Northern coal district is washed in one of the four plants except that coming from low volatile coal fields in West Virginia.

Anthracite Convention

The Seventh Annual Anthracite Convention at Lehigh University, Bethlehem, Pa., on May 5 and 6, will highlight current progress in anthracite and anthracite equipment and future industry and technical trends.

This year's convention will feature papers by leading engineers, educators, and members of the producing and detailing industry, emphasizing new research and new equipment developments, as well as progress in utilization and merchandising of anthracite.

Chairman A. C. Callen will introduce Martin D. Whitaker, president of Lehigh University, who will give the address of welcome.

Five sessions will be devoted to papers and discussions on research, general topics, mining and preparation, utilization, and retailing.

A summary of the conference papers will be given by A. C. Callen, head of the department of mining engineering at Lehigh University.

Large Hoists Sold

Six giant hoists, the largest ever built for coal mines, have been sold to the French Government by the Hardie-Tynes Mfg. Co., Birmingham, Ala. A seventh hoist has been shipped to Liverpool, England. The hoists have two drums 19 ft 8 in. in diameter by 7 ft 4 in. wide. About 24,000 lbs of coal can be hoisted each 45 seconds from a depth of 820 ft. Fifteen freight cars were required to transport one hoist from Birmingham to New Orleans.

BOOTH No. 425

Cleveland Coal Exposition. . . . See the newest of Elreco's many mining materials—The new, startling

QUICK—CONNECT Splice Box

AS A SAFETY FIRST RULE

SEE IF ELRECO MAKES IT

MANUFACTURERS SINCE 1892

OVERHEAD TROLLEY LINE MATERIAL • SPECIAL TYPE DISTRIBUTION BOXES • GAS TIGHT CABLE CONNECTORS

The ELRECO Corporation

CINCINNATI 23, OHIO

Robins Gyrex Screen gives thrifty, dependable service on same installation since 1933

For more than 15 years the Robins Gyrex Screen pictured above has given low-cost service at the Mohawk Mining Co., Kittanning, Pa.

"It just runs on and on!" says D. H. Turner, Mohawk president.

Such long service is typical of what you can expect from Robins Gyrex Screens. You can use them for a wide variety of sizing or separating jobs—for coal, coke, gravel, stone, sand, rock, ore and many bulk materials.

Developed by Hewitt-Robins, the Gyrex vibrating screen is extremely versatile. It can separate as many as six different sizes at one time. It can size anything from fine hair to coarse rock. And it can handle hundreds of tons of bulk material every hour.

Once *you* install a Gyrex Screen, you will soon discover these five advantages:

1. Smooth operating. Has powerful vibration within itself. Yet *does not vibrate* the building or supports.

2. Versatile. Available in a weight to meet any class of service—a size to solve every problem. More than 300 models and styles.

3. Economical. Uses minimum of power per ton of material screened.

4. High capacity and efficiency. Uniform positive motion and correct centrifugal action.

5. Long life, low maintenance cost. All bearings super-sealed. All permanent connections electric-welded. All service connections jig-drilled for fitted bolts.

ROBINS

GYREX SCREENS

Consult Robins now. There's a Gyrex Screen to meet *your* exact needs.

SEND TODAY for Robins Bulletin No. 115-A. Fully illustrates and describes features, advantages and benefits of efficient Gyrex Screens. Address Robins Conveyors Division, 270 Passaic Avenue, Passaic, New Jersey.

ROBINS CONVEYORS DIVISION **HEWITT-ROBINS INCORPORATED**

HEWITT-ROBINS INCORPORATED HR

Giant sludge tank under construction at Holden, W. Va., for Kentucky-Elkhorn No. 1 of the Pond Creek Pocahontas Co.

Republic Steel Buys Abroad

An interest in the Liberian Mining Co., Ltd., a corporation of Liberia, West Africa, has been purchased by the Republic Steel Corp. Reserves of more than 20,000,000 tons of high-grade open hearth iron ore are estimated for development on the concession which lies about 45 miles northeast of the seaport capital, Monrovia. A railroad to service the mine is now under construction.

The ore is a mixture of hematite and magnetite, assaying 68 percent iron and low in phosphorous, sulphur, and silica. The cliff-like exposure of the ore which extends above the surface from 30 to 100 ft, is about a mile in length.

Republic Steel officials who went to Liberia to negotiate the contract were: Donald B. Gillies, mining consultant; Edwin B. Winning, assistant vice-president in charge of operations; and Roy A. Eldridge, traffic manager.

Diverse Opinions on Conveyor

The proposed Lake Erie to Ohio River conveyor belt system for transporting iron ore and coal has developed into a controversial issue between the steel and railroad industries. Debate centers on a pending bill to give the newly formed Riverlake Belt Conveyor Lines, Inc. the status of common carrier and power of eminent domain.

A number of railroads operating main lines in Ohio and the rail brotherhoods oppose the two-way belt line project which would haul coal north and carry iron ore south between Lorain, Ohio, on Lake Erie and East Liverpool, Ohio, on the Ohio River.

Sponsors of the belt system claim it would result in substantial savings to taxpayers through reduced freight costs on iron ore, coal, and limestone, major ingredients of steel making.

C. M. White, president, Republic Steel Corp. stated he considered the proposed belt system "a sound engineering plan."

High-Grade Coal for Europe

John S. Routh, president, Coal Exporters Association of the United States, Inc., following his recent return from Europe, observed that high-grade American coal, now in surplus, should be exported to Europe to speed up postwar reconstruction. Mr. Routh pointed out that the industrial economies of Belgium, the Netherlands, France, Switzerland, and Italy were developed on metallurgical coking coals used in the "by-product" carbonization ovens. These coals were received from England and Germany, but today the British can supply the Continent with only a small tonnage, and only a small quantity is available from Germany. Now the United States is the only producer which can supply the quality coal needed in sufficient amounts.

Increase in Coal Dumpings

Coal dumpings at Hampton Roads will be increased by 1,000,000 tons a year when output of two expanded mine operations near Dante, Va., starts soon. Shipments will originate on the Clinchfield Railroad and will approximate 100,000 tons per month.

For this Robins Screen or for any screen... always specify

ROBINS Screen Cloth

1 **Needs less changing.** Robins Super-Gyraloy Screen Cloth increases the time between screen cloth changes.

2 **Increases resistance to abrasion.** Super-Gyraloy Screen Cloth is made of specially blended alloy steel wire. Its heat treatment and micro-structure increase resistance to abrasion without sacrificing ductility.

In fact, a wire of this cloth can actually be bent around its own diameter without fracture.

Robins Super-Gyraloy Screen Cloth is tough, hard, stiff . . . yet elastic.

SEND TODAY for Bulletin No. 113. Fully describes Robins Super-Gyraloy Screen Cloth, 3/16″ to 6″ openings, made from #12 gauge wire to 5/8″ rod in square and rectangular openings, flat top and non-blind weaves. Also in Gyraloy (spring steel), stainless steel, Monel metal or brass in any standard diameter of wire. Robins Conveyors Division, 270 Passaic Ave., Passaic, New Jersey.

HR
HENDRICK-ROBINS INCORPORATED

Cooperation Promotes Safety

The Kentucky River Mining Institute is promoting safety through the cooperative work of the mines of the Hazard fields in eastern Kentucky. During 1948 the mines in the Hazard field averaged 1,040,552 tons of coal per fatality as compared with the national average of about 660,000 tons per fatality. The Institute promotes such increased safety through monthly meetings of sub-officials and a full-time safety director who also carries on safety work for the individual mines.

Coal Gasification

The joint Gorgas underground gasification project at Gorgas, Ala., which is being undertaken by the U. S. Bureau of Mines together with Alabama Power Co. was fired in late February. The second experiment is being carried on at deeper levels (60 to 125 ft) than the original 30-ft depth. Two 1200-ft parallel entries were driven from the outcrop into the coal bed and a single butt entry for additional 300 ft. Five large diameter bore holes were drilled in the coal seam at crosscuts linking the entries. Seals on gas and air connections at entry portals were constructed and were also built at the surface outlets to bore holes.

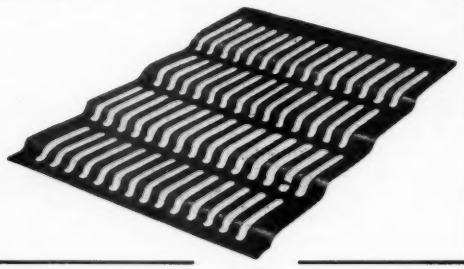
Winters Mine First Aid Training

Recently all employes of Winters mine, Farraday, Ky., one of Consolidation Coal Co.'s (Ky.) operations, completed the regular course in first aid training conducted by the U. S. Bureau of Mines. They were joined in this effort by the store employes of Elkhorn Collieries Corp. and twelve school students, sons of employes who were interested. Day and night classes were held in order that employes working on the different shifts could take advantage of the opportunity to receive training. The Winters mine was acquired by Consolidation in April 1948 and this is the first time employes of that mine have been 100 percent trained in first aid.

See Hendrick Specialties

in Booth 324

... at the Coal Show in Cleveland



To illustrate the great range Hendrick can furnish in perforated metal, a perforated screen of 15/16" steel with 2½" round holes and 31 gauge brass with .020" round perforations will be shown.

Another special exhibit will be an electrically operated Hendrick Testing Screen.

The wide Hendrick line of production-speeding equipment for the coal industry includes Flanged-Lip Screens, Wedge-Slot Screens, Vibrating and Shaking Screens, Elevator Buckets, Flights, Shaker Conveyor Troughs and Ball Frames.

Hendrick Flanged-Lip Screens, for screening and dewatering coal, are available in 148 different standard slot sizes.

Hendrick Wedge-Slot Dewatering and Dryer Screens are furnished with different types of profile bars designed expressly for specific applications.

Hendrick Perforated Plate for vibrating and shaking screens retains uniformity of mesh throughout long service life.

Hendrick Shaker Conveyor Troughs, of high carbon steel offer maximum resistance to abrasion, and to bending, breaking or buckling.

Write for detailed information on Hendrick products in which you may be interested.

SEE OUR CATALOG IN SWEET'S

Perforated Metals
Perforated Metal Screens
Wedge-Slot Screens
Mitco Open Steel Flooring,
"Shur-Site" Treads and
Armorgrids

HENDRICK

Manufacturing Company

62 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices In Principal Cities

Continuous Mining Research

Dr. C. E. Lawall, assistant vice-president of the Chesapeake & Ohio Railroad and chairman of the mining development committee of Bituminous Coal Research, Inc., has named Huntington, W. Va., as the site of a $250,000 project for developing a continuous coal cutting and loading machine. Work on the project began February 15 under the direction of Gerald Von Stroh. Huntington was chosen as the site because of its proximity to the bituminous coal fields.

P & R Develops New Mine

At Porter Tunnel, Pa., the Philadelphia & Reading Coal & Iron Co. is developing a mine which is reported to have reserves in the neighborhood of 10,000,000 tons of anthracite. A 4220 ft rock tunnel will be driven to reach coal and modern cleaning plant will prepare a quality product. It is estimated that 500 men will be employed at peak operation of the new mine and plant. Modern mining equipment and safety devices will be installed to provide the ultimate in safe and efficient operation.

Researchers Needed

The Department of Metallurgy of the Massachusetts Institute of Technology is offering research assistantships and associateships in mineral engineering under the sponsorship of the Atomic Energy Commission for the purpose of broadening and advancing scientific knowledge to the utilization of minerals.

Application should be made by letter to A. M. Gaudin, Richards professor of mineral engineering, Room 8-209, Massachusetts Institute of Technology, Cambridge 39, Mass.

L. E. YOUNG
Consulting Engineer
Mine Mechanization
Mine Management
Oliver Building Pittsburgh, Pa.

J. W. WOOMER & ASSOCIATES
Consulting Mining Engineers
Modern Mining Systems and Designs
Foreign and Domestic Mining Reports
NATIONAL BANK BLDG.
WHEELING, W. VA.

Hill Mine First Aid

The training Program of the Hill mine was supported by local union officials

Employes of the Hill mine of Consolidation Coal Co. (Ky.) recently completed the U. S. Bureau of Mines 15-hour course in first-aid training. This is the company's third mine to have 100 per cent of the employes trained in first-aid in the last few months. The training classes were conducted by Consolidation's first-aid instructor, Blain Sexton, under the supervision of the U. S. Bureau of Mines' instructors. The Hill mine is located in Pike County near Virgie, Ky.

Clinchfield Production

Two five-year contracts for sale of a minimum of 1,500,000 tons of coal a year have been signed by the Pittston Co. The coal will come mainly from the Moss and Meade mines of the subsidiary Clinchfield Coal Corp. in Virginia. The Moss mine, served by Clinchfield Railroad, was brought into production in June 1947, and the Meade mine, served by the Chesapeake & Ohio was brought into production in September 1948. Total output of the Clinchfield Co. will be at the rate of 5,000,000 tons per year as compared with slightly more than 3,000,000 tons in 1948.

Safety at Consolidation Mine

On February 9 employes of Consolidation Coal Co. (Ky.) Mine 207 were awarded the annual bronze safety plaque of the Big Sandy-Elkhorn Coal Mining Institute, Pikesville, Ky., for having the best safety record in 1948 of Class A mines holding membership in the Institute. This award is made annually on a basis of accident frequency and severity. In 1948 the 300 employes of Consolidation's Mine 207 made the best record.

This Heavy-Media plant at Mahanoy City, Pa., is operated by the Rhoads Contracting Co. Caption in February issue was incorrect

THOR MODEL 75
SINKER ROCK DRILL

MORE SHAFTS

ARE SUNK WITH THE THOR "75" THAN WITH ANY OTHER SINKER!

If any one fact stands out in the preference for Thor's great 55-pound sinker among mine operators *this is it.*

Sinking the mine shaft is the toughest test for any sinker . . . yet, in test after test against rigid competition, Thor's "75" outdrills every machine in its class . . . has been the standout choice for more shaft sinking operations than any other sinker!

See the preferred sinker *first* . . . at Thor distributors everywhere, or write for Catalog MC1.

INDEPENDENT PNEUMATIC TOOL COMPANY
AURORA, ILLINOIS
Export Division: 330 West 42nd Street, New York 18, N.Y.
Birmingham Boston Buffalo Chicago Cincinnati Cleveland Denver
Detroit Houston Los Angeles Milwaukee New York Philadelphia
Pittsburgh St. Louis St. Paul Salt Lake City Seattle
San Francisco Toronto, Canada Sao Paulo, Brazil London, England

Thor PORTABLE POWER TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

Coal—Largest Mining Industry

A recent survey by the Bureau of Labor Statistics shows that bituminous coal mining is the largest of the mineral industries, accounting for more than 20 percent of all mineral products in dollar value. The bituminous coal industry employs almost 50 percent of the total manpower utilized in mining. Current employment in the bituminous coal industry is 390,000 men, only 5 percent more than in 1939. Despite this relatively slight change in personnel, the coal industry last year produced more than 50 per cent more coal than in 1939.

American Zinc Institute

The thirty-first annual meeting of the American Zinc Institute was held at the Hotel Statler, St. Louis, Mo., April 11 and 12.

The Monday morning sessions were devoted to discussions on: "The Zinc Supply in 1949," "The Tax Outlook," "The Steel Industry of 1949," and "Where Do We Stand on Labor Relations?" In the afternoon the following subjects were discussed: "The Effect of Freight Rates on Zinc Prices," "Smelting Costs Since 1939," "The Outlook for Zinc Markets," and "Zinc—Its Mining, Milling and Smelting."

Tuesday topics were: "ECA and Mining Abroad," "The Mining Industry of the Future," "Nonferrous Metals and Defense Program."

The annual dinner and smoker was held on Monday evening.

Spectrochemical Method Identifies Silver Content

U. S. Bureau of Mines physicists have devised a method for determining the silver content of an ore or concentrate sample by burning it in an electric arc and photographically recording the resulting "colors." The spectrochemical method is based on the range in the spectrum of the radiations from various chemical elements under extreme heat. Although not as accurate as fire assaying, the method is said to be satisfactory for rapid preliminary analysis to determine the silver content of field samples, especially as the content of a number of other metals can be learned at the same time. Report of Investigations 4377, "A Method for Spectrochemical Determination of Silver in Ore Samples," by Graham W. Marks and E. V. Potter, describing the method in detail may be obtained from the Bureau of Mines, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa.

for DUMMIES THAT CAN "TAKE IT"
WET or DRY . . .
SEAL-TITE TAMPING BAGS
for Doubled Protection from Breaking and Spilling
HIGH WET STRENGTH
SAFETY SEAM

Streamline blasting procedure with dummies made-up with Seal-Tite Tamping Bags. They're extra-tough to take the added strain of greater bulk and the rougher handling those big dummies get.

Time, labor and costs are saved with supplies of dummies quickly and simply made up by unskilled help. They're always handy and ready for use. They can be stored safely without special precautions because they're all-weather bags. Their high wet-strength and safety-seam protect them from breaking and splitting.

See us at BOOTH 102 At the Coal Show

SEND FOR SAMPLES . . .

We'll send you samples of Seal-Tite Tamping Bags to try out — in the sizes you need — or in an assortment. Yours for the asking.

Tamping Bag Co.

216 SO. THIRD ST.
MT. VERNON, ILL.

Strip Coal for Power Plant

Union Carbide & Carbon Co. is planning construction of a power plant just south of Marietta, Ohio, and has purchased strip mining land in four or five southern Ohio counties to fuel the project.

Benson Mines Plans Higher Output

At Benson Mines, Star Lake, N. Y., Jones & Laughlin Co. aims at shipping 900,000 tons of iron ore in 1949 to the company's steel mills at Pittsburgh. Shipments during 1948 totaled 809,000 tons of ore.

University of Kentucky Scholarships

In the annual report to the board of trustees, the president of the University of Kentucky states "Along with the Princess Elkhorn Coal Co.'s annual two four-year scholarships, the Ashland Oil and Refining Co. scholarship, the Harry E. Bullock, Jr. award, and the Inland Steel Co. scholarships, there was established during the past year an annual graduate fellowship fund of $2500 in mining engineering by the Consolidation Coal Co. (Ky.), and two four-year scholarships each year for students in mining engineering by the Harlan County Mining Institute."

Ima Mine Resumes Operations

(*Continued from page* 92)

helper on each of three shifts, tailings disposal man and mill superintendent. Mill maintenance is performed by two mechanics, who take care of equipment repairs and maintenance on the entire operation.

Compressed air is furnished by three Gardner-Denver compressors each powered by a D-13000 Caterpillar Diesel engine, and delivering a total of 1400 cfm; 100 lb of air pressure is maintained at the compressors, and 80 to 85 lb at the working faces.

Power is supplied by three D-13000 and one D-7700 Caterpillar Diesel engines, and one two-cylinder, 120-hp Fairbanks-Morse Diesel engine, all driving a-c generators. The rod mill is belt-driven by a D-13000 Caterpillar engine.

An extensive interchange of personnel and equipment is maintained between the Ima mine and the Yellow Pine mine, the Bradley Mining Co.'s larger operating property in Idaho. Staff members from the Yellow Pine mine are consulted frequently on problems involving metallurgy, electric power, construction, and personnel. Company-owned airplanes are used extensively for transportation of employes and equipment between the two mines, and between the Ima mine and the large cities in the intermountain area. Flying time between the Ima and the Yellow Pine mine is 45 minutes; driving time is 7 hours in summer and 14 to 16 hours in the winter.

Following is a list of the members of the operating staff at the Ima mine:

J. A. Mecia, manager
C. C. Hathhorn, assistant manager and mine superintendent
J. S. Anderson, mill superintendent
J. A. Miller, master mechanic
J. C. McFarlane, engineer
W. H. Nelson, clerk

John D. Bradley, executive vice-president of the Bradley Mining Co., is in charge of all Idaho operations, and is assisted by H. D. Bailey, manager of the Yellow Pine mine and Idaho agent.

Consultants for the Ima mine operation include:

Ira B. Joralemon and Dr. Carlton D. Hulin, geology
D. N. Vedensky, metallurgy

There's a Macwhyte Rope that's the right rope for your equipment

All job-proved—a thousand and one wire ropes to choose from

Macwhyte Wire Rope

For easy handling and longer service use PREformed Whyte Strand Wire Rope—it's internally lubricated

Ask a Macwhyte representative to recommend the rope best suited for your equipment.

MACWHYTE COMPANY
2952 Fourteenth Avenue, Kenosha, Wisconsin

Manufacturers of Internally Lubricated Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies.

Catalog on request

Our distributors and mill depots throughout the U. S. A. and other countries carry stocks for immediate delivery.

Mill depots

New York • Pittsburgh • Chicago • Minneapolis
Fort Worth • Portland • Seattle • San Francisco
Los Angeles

at the Coal Show—

The all-electric ... self-propelled

CP One-Man Permissible Tramdrill for trackless mines

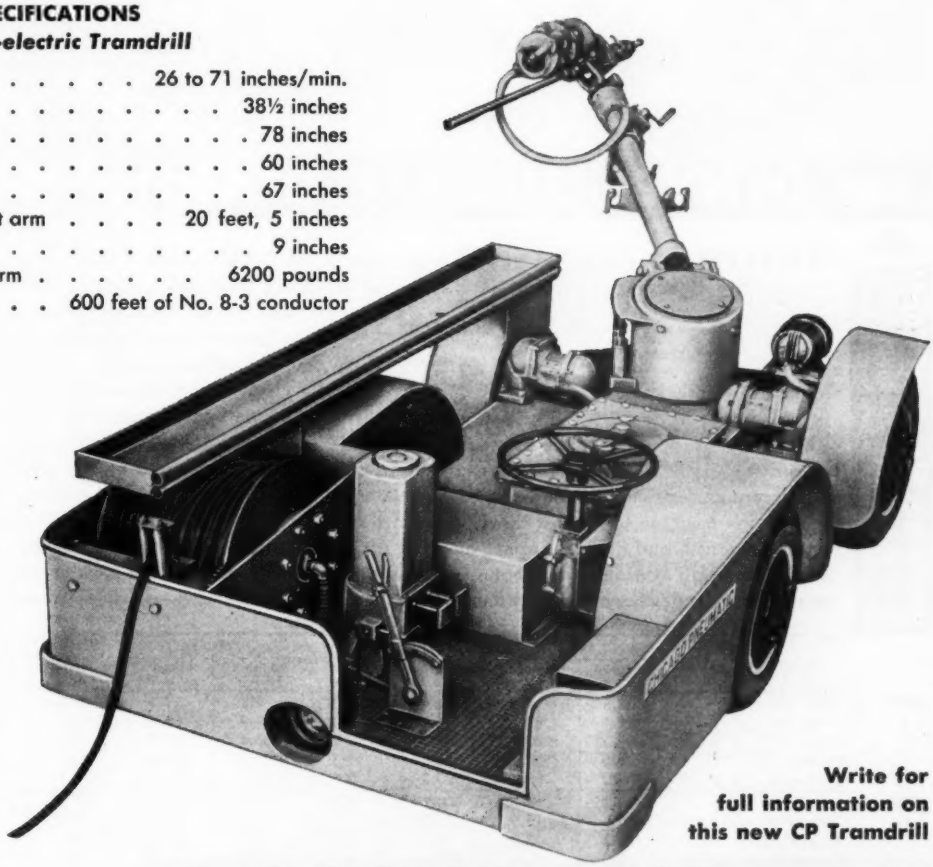
Drilling, tramming, and cable reel — all are powered by electric motors on the CP One-Man Permissible Tramdrill. Mobile . . . easy to operate . . . it drills shot holes in coal up to 4½" in diameter . . . at any angle . . . within four inches of roof or bottom. It also drills in rock, except sandstone.

Definitely a one-man drill, the electrically powered CP Drill Arm has all controls at the end of the arm, within easy reach of operator. Safety interlocking switch cuts off electric drill motors while tramming; prevents tramming while drilling.

CP Tramdrill complies with all requirements of U. S. Bureau of Mines and carries Bureau's permissible name plate No. 2-641 for operation on 250-volt D.C. power; No. 2-641A on 500-volt D.C.

SPECIFICATIONS
TDS all-electric Tramdrill

Drilling speed, full load	26 to 71 inches/min.
Overall height	38½ inches
Overall width	78 inches
Wheel base	60 inches
Wheel gauge	67 inches
Overall length with 7-foot arm	20 feet, 5 inches
Ground clearance	9 inches
Weight, with one 7-foot arm	6200 pounds
Cable reel capacity	600 feet of No. 8-3 conductor

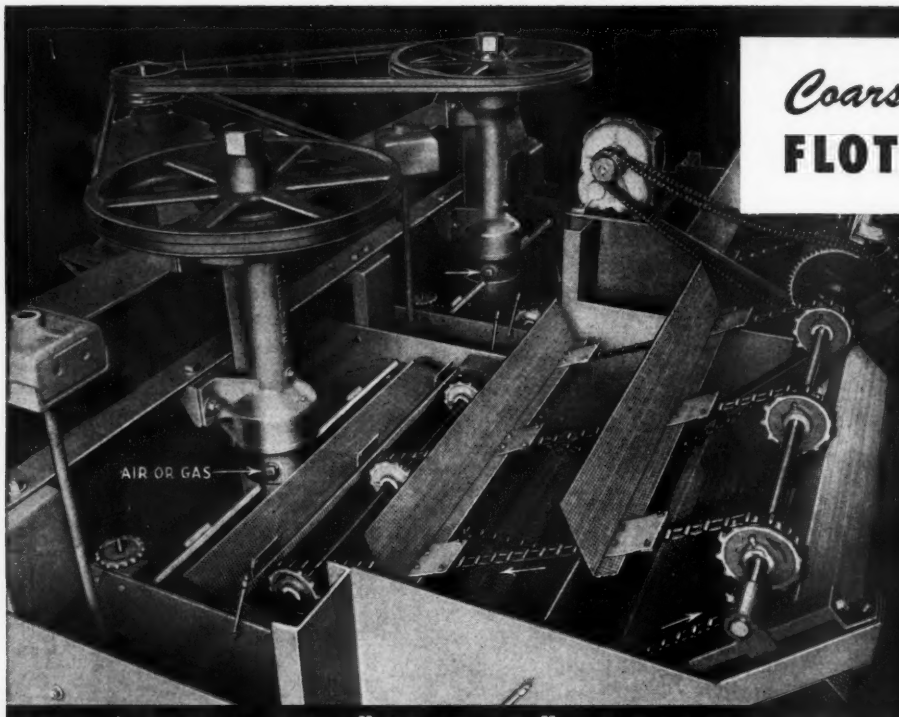


Write for full information on this new CP Tramdrill

Booth 622
Public Auditorium
Cleveland
May 9-12

CHICAGO PNEUMATIC TOOL COMPANY
General Offices: 8 East 44th Street, New York 17, N. Y.

HAND-HELD AND POST-MOUNTED ELECTRIC COAL DRILLS • ELECTRIC DRILL ARMS
ELECTRIC TOOLS • PNEUMATIC TOOLS • AIR COMPRESSORS • ROCK DRILLS



Coarse* COAL FLOTATION

Working directly with the Bureau of Mines Coal Preparation Section, and with large coal companies engaged in solving the problem, Denver Flotation Engineers designed a Flotation Machine which does an effective job of coal cleaning as will be noted in the tabulations below from Bureau of Mines Report of Investigations 4306, July 1948.

Marketable results are obtained on varying types, grades and sizes of coal fractions.

with DENVER "SUB-A" FLOTATION MACHINES

We'll be Floating Coal! Cleveland, May 9-12... Booth A-131 Main Exhibit Hall...American Mining Congress

PROBLEM • Treating coal fractions from 1/16"-0. Two objectives are sought—

1) *to save marketable grade of coal in these sizes and*

2) *eliminate stream pollution from wasted slurry water.*

These coal fractions cannot be satisfactorily cleaned by "gravity" methods. With flotation remaining as the most acceptable solution, a prime consideration is that the flotation machine used must be capable of handling both coarse and fine sizes effectively. The rapid rising, dense agglomerate type "matte" coal concentrate must be removed and dewatered in large volume.

SOLUTION • No commercial flotation machine can treat both coarse and fine sizes so effectively as the Denver "Sub-A." This selective feature plus its extreme mechanical and metallurgical flexibility makes it the logical choice for coal cleaning work.

Removal and dewatering of the dense agglomerated "matte" concentrate was accomplished with special "deep-digging" punched plate rakes which carry the 7"-8" coal matte up the spitzkasten allowing surplus water to drain back in the pulp through the perforated rakes. Further dewatering is carried out in a wedge bar compression screw conveyor. Surplus water returns via middling feed pipe to the Denver "Sub-A" Flotation cell for re-use, thus eliminating surplus slurry water.

	SCREEN SIZE, MESH	FEED		CLEANED COAL		REFUSE		DISTRIBUTION, %		Reagents, lbs. per ton feed
		Weight, percent	Ash, 1* percent	Weight, percent	Ash, 1* percent	Weight, percent	Ash, 1* percent	Cleaned Coal	Refuse	
MINE I *	10 to 14	18.8	11.9	23.0	6.2	9.1	31.6	77.6	22.4	Kerosene, 3.27
	14 to 35	51.4	19.1	56.0	7.6	31.9	65.3	80.1	19.9	B-23 Frother, 0.24
	35 to 100	23.3	40.3	17.0	13.4	35.6	81.8	60.7	39.3	Pine Oil, 0.11
	Through 100	6.5	58.3	4.0	19.3	23.4	84.0	39.7	60.3	
	Composite through 10	100.0	25.2	100.0	8.7	100.0	72.5	74.1	25.9	
MINE II *	10 to 35	64.2	10.5	58.2	3.4	54.0	50.7	85.0	15.0	Kerosene, 3.46
	35 to 100	22.6	10.5	26.9	4.6	22.2	66.2	90.4	9.6	B-23 Frother, 0.26
	Through 100	13.2	12.8	14.9	6.3	23.8	64.8	88.9	11.1	Pine Oil, 0.20
	Composite through 10	100.0	10.8	100.0	4.2	100.0	57.5	87.6	12.4	

1*—Moisture free basis

CONSULT WITH YOUR DENVER "FLOTATION ENGINEERS"

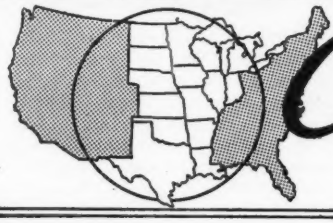
"The firm that makes its friends happier, healthier and wealthier"

DENVER EQUIPMENT 24 HOUR SERVICE COMPANY

DENVER EQUIPMENT COMPANY

P. O. BOX 5268 • DENVER 17, COLORADO

DENVER • NEW YORK CITY • CHICAGO • TORONTO • VANCOUVER • MEXICO CITY • LONDON • JOHANNESBURG • RICHMOND, AUSTRALIA

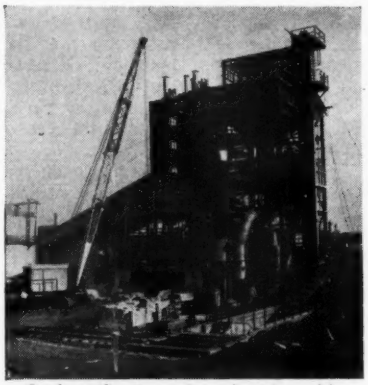


Central States

Synthetic Plant Dedication

On May 8, at Louisiana, Mo., two new coal to oil demonstration plants will be dedicated by the U. S. Bureau of Mines. These plants will employ different processes to convert coal and lignite into high quality synthetic liquid fuel.

Louisiana, Mo., was selected as the site for these demonstration plants



Coal gasification unit at Louisiana, Mo.

because of its central location with respect to the nation's major coal fields. Over 200 proposed locations in 21 coal producing states were considered carefully before the selection was made.

First of the new units—the hydrogenation demonstration plant—is now ready for operation. Production capacity ranges from 200 to 300 bbl daily. The plant is designed to carry out two major operations: liquid-phase hydrogenation, which liquefies coal; vapor-phase hydrogenation, which converts liquified coal to gasoline and by products. The plant follows the basic design of the German units that supplied aviation gasoline used by the Nazi air force during World War II. Numerous innovations have been incorporated into the American research plants to provide automatic control, increase capacity, reduce personnel, plus other improvements to lower product costs. A commercial plant with a capacity of 30,000 bbl could produce gasoline, according to estimates, at a cost of 12¢ to 15¢ per gallon if no credit is taken for by products.

The gas synthesis demonstration plant now under construction is scheduled for completion this year. It will be an 80-100 bbl per day unit to gasify pulverized coal and then convert the gas by the indirect Fischer-Tropsch process to produce either a good grade of motor gasoline or an excellent Diesel fuel. Product costs are expected to approximate those of the hydrogenation process.

Homestake Production

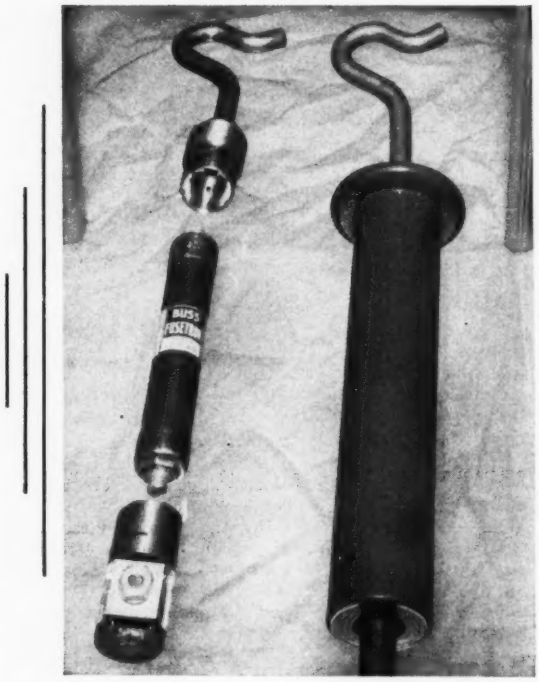
In 1948 the Homestake Mining Co., Lead, S. D., reported a net profit of $2,445,868 or more than $100,000 less than in 1947. The tonnage of ore mined and milled was greater than in 1947, totaling 896,862 tons. A shortage of skilled miners prevented output from obtaining a capacity of the milling plant. Output of gold for 1948 was 32,457 oz less than in 1947. Due to a decline in the grade of ore mined the total output for 1948 was 360,716 oz.

In transmitting the annual report to the stockholders of the company, Donald H. McLaughlin, president, pointed out that the gold mining industry is operating in an artificially depressed condition imposed by the restrictions of the United States on ownership and sale of gold. He stated that since 1934, wage rates have more than doubled and the cost of supplies has advanced about 70 percent.

Copper Country Safety

In the interest of improving safety, new safety rule books have been mailed to all underground employes of the Calumet and Hecla Consolidated Copper Co. The revised booklet contains instructions and rules for the prevention of accidents. In the letter of transmittal, O. A. Rockwell, mining manager, emphasized knowledge of basic rules and safe working habits as fundamental to the ability to think and act safely under any conditions.

SEE THE LIVE ALLIGATOR
in Booth A-337
to be given away to some lucky man at the
COAL CONVENTION in CLEVELAND
After you have shaken hands with this friendly fellow be sure to see the:
HINGED FLEXCO BELT FASTENERS... the new separable fasteners for conveyor belts.
FLEXCO HD BELT FASTENERS and RIP PLATES for conveyor belts.
ALLIGATOR BELT LACING for flat transmission and conveyor belts.
See You in Cleveland!
FLEXIBLE STEEL LACING COMPANY
4607 W. Lexington St., Chicago 44, Illinois



Latest MESCO Trolley Tap

Catalog Number 1051

The latest Mesco trolley tap gives almost solid path of power from trolley hook to machine. Made to accommodate standard trolley tap fuse, a fusetron with threaded stud end, or standard one time trolley tap fuse with stud on either end. Threaded stud on fusetron or fuse makes the almost solid connection between hook end fuse holder and cable end fuse holder, eliminating burning of the fuse in loose ferrule type connection.

This new feature not only makes a better electrical connection but increases the strength of the entire trolley tap.

Visit Us at the Coal Show—Booth No. 1404

MOSEBACH ELECTRIC & SUPPLY CO.
1115 ARLINGTON AVE. PITTSBURGH 3, PA.
Phone: Hemlock 8332

Pioneer Plans New Level

Shaft sinking operations at the Pioneer iron mine of the Oliver Iron Mining Co., Ely, Minn., are progressing in order to develop a 16th level. The present output coming from the 14th and 15th levels will be augmented by production from the 16th level.

The Pioneer "A" shaft, used for handling men, supplies, and rock, is now bottomed on No. 16 level at a depth of approximately 1446 ft. The "B" shaft, used for ore hoisting, now bottoms 44 ft below the 15th level and will be driven to bottom on the 16th level.

Leaching Plant Scrap Treatment

Treatment of scrap is being emphasized by the Lake Linden leaching plant of Calumet and Hecla Consolidated Copper Co. to offset a decrease in copper production due to curtailment of sand leaching. A new track has been laid to make direct connection between the smelter yard and the plant to facilitate the handling of the scrap.

The leaching process is particularly suited to such scrap as old motors, generators, telephone parts, copper clad steel wire and other combinations of copper and steel. Scrap materials has been treated at the plant for several years. During the war the government sponsored a program of reclaiming copper from gilding metal scrap, a copper covered steel from which bullet jackets were made.

Research work in developing a market for oxide has resulted in orders which it is anticipated will extend the life of the plant beyond the point expected at the time it was built.

Mass Tree Planting

Crews of tree-planters are now at work in the 1949 renewal of the largest mass tree planting program in the state of Indiana. Member companies of the Indiana Coal Producers Association are creating new forests on more than 2200 acres of land from which they have removed coal by the open-cut method.

This season, the crews expect to set out about 1,530,000 trees, bringing to nearly 25,000,000 the total planted by association members in the 25 years the program has been in effect. L. E. Sawyer, association director of forestry and reclamation, said that 16 varieties of trees will be used, almost evenly divided between conifers and native deciduous trees.

The forestry program is a private enterprise, and in addition to it, the association members will seed 90 acres for pasture in Daviess and Vermillion Counties, Ind.

Shearing Lignite

At the Dakota Collieries Co., which mines lignite from an open cut at Zap, Mercer County, N. D., a locally made coal shearing machine is used to cut the coal vertically. The machine has been adapted from an old coal cutting machine and is equipped with a 50 hp motor, a 10-ft cutter bar and various accessories including a winch and table arrangement to feed the machine through the lignite. With one man operating the unit, it can cut about 25 ft of coal per hour.

Drilling Symposium

A special symposium on drilling will be held at the University of Minnesota School of Mines and the Center for Continuation Study at the Hotel Duluth, Minn., on April 21, 1949. "Drilling Problems Associated with Sample Recovery" will be the subject.

The morning session will be devoted to core drilling problems and the afternoon will be devoted to "structure drilling" and sampling of intermediate iron ore. Robert D. Longyear is chairman of the morning session and Sam E. Atkins is chairman of the afternoon session.

Winter Stripping

Winter mine stripping operations were carried on by the Cleveland-Cliffs Iron Co. on the Mesabi range of Minnesota. Stripping activities are underway at the Hill, Holman, Hawkins, Atkins, and the Wanless-Woodbridge mines. The Wanless-Woodbridge property at Buhl, Minn., is the most recent operation and is now well advanced in the development for pit mining and is scheduled to ship ore during this season.

The high-density unit added to the Holman mine washing plant at Taconite, Minn., on the western Mesabi range, went into production at the opening of the shipping season.

C W & F Extends Holdings

Recent purchases have given the Chicago, Wilmington & Franklin Coal Co. a block of about 14,000 acres of coal land in Jefferson County, Ill. The Franklin County field, first developed chiefly in Williamson County, and now producing largely from Franklin County, extends well into Jefferson County. The coal there is of the same low sulphur content as in adjoining fields.

In December 1947, the C W & F Co. began to develop a mine on its part of the Jefferson acreage. The purchase of additional acreage previously held by the Ziegler Coal Co. plus additional purchases gives the company considerable reserves. The company has also added to its reserves of Franklin County coal and now has about 5000 unmined acres in that area. There are no immediate plans for developing this acreage.

Fluorspar Mine Sinks Slope

Gil Lokersey, owner and manager of the G & L Fluorspar Mining Co., Elizabethtown, Ill., has abandoned his "strip mine" operations to sink a new slope shaft for fluorspar mining.

Farming Coal Land

Irwin Reiss, farm management specialist, has been appointed general manager of Meadowlark Farms, Inc., Sullivan, Ind., which operates properties on coal-bearing land already mined or held in reserve in several counties in Indiana and Illinois.

Meadowlark has extensive experimental work underway including a series of experiments in the production of fish, a feeder cattle project with more than 200 head now on pasture, and cross-breeding experiments.

Largest Profits Come to Those Who Recognize Trends

More and more, as the years roll on, coal mine operators are finding increased demand for prepared coal sizes. The operator who looks ahead is planning now to take care of this demand with profit to himself.

SuperDuty Coal Washing Tables are becoming increasingly popular with these men because of the two-fold results. The SuperDuty separates slate and other impurities of higher specific gravity, producing the ultimate in clean coal.

So efficient is the SuperDuty that many are finding it profitable to process so-called waste piles, culm banks and river deposits.

CONCENCO FEED DISTRIBUTOR

The Concenco Revolving Feed Distributor is a heavily fabricated, all-steel machine, with motor drive requiring only ¾ H.P. in operation. This distributor effectively provides a splitting of feed into any desired number of equal portions. It is especially suitable for feeding efficiently a battery of coal washing tables.

For full information ask for Bulletin 119
Visit our Booth No. 809 at the Coal Show

THE DEISTER★ CONCENTRATOR COMPANY
CONCENCO PRODUCTS

★ *The ORIGINAL Deister Company* ★ *Inc. 1906*

917 Glasgow Ave. • Fort Wayne, Ind., U.S.A.

The Heyl & Patterson Cyclone Thickener is a hydraulic device made to separate a suspension of solids in water into a thickened underflow and a low concentration overflow. It differs from the ordinary gravity type of settling basin by using Centrifugal Force of up to 12,000 times gravity to separate the solids from the fluid.

Heyl & Patterson believes that, after many years of laboratory experiments, the CYCLONE THICKENER Now can be offered to the Mining Industry as a practical Piece of Equipment, capable of performing efficiently under rugged operating conditions.

Form your own opinion after witnessing a demonstration of the H&P Cyclone Thickener in Booth No. A-424 at the Coal Show.

SEE HOW the POTENT FURY of NATURE'S DESTRUCTIVE CYCLONES Has Been HARNESSED for GOOD by the *Heyl & Patterson* CYCLONE THICKENER

***In Booth A-424 at the* Coal Show**

Ore Bridges
Railroad Car Dumpers
High Lift-Turnover-Rotary
Coal Preparation Plants
Coal & Coke Handling Equipment
Boat Loaders and Unloaders
Rotary Mine Car Dumpers
Coal Crushers
Coal Storage Bridges
Car Hauls & Boat Movers
Bradford Breakers
Refuse Disposal Cars
Thorsten Coal Samplers
Kinney Car Unloaders
Pig Iron Casting Machines

Heyl & Patterson, Inc.

"SINCE 1887"

55 WATER STREET · PITTSBURGH 22, PA.

New Open-Pit Mine

A new open-pit mine on Minnesota's Mesabi Range is being developed by Pickands, Mather & Co. directly west of the old Leetonia open-pit mine. Stripping operations are currently under way and material removed is being used for road construction and leveling areas for buildings. It is reported that the tract contains excellent direct-shipping ore which will make up a portion of the company's 1949 shipments.

Champion Mine Scheduled for Production

The North Range Mining Co. shipped a total of 417,135 tons of iron ore from three properties in Michigan during the 1948 navigation season. The company is now preparing the Champion mine at Beacon, Marquette County, Mich., for production this year. Water has been removed from the workings and exploration will start soon.

ECA Official Discusses Nonferrous Metals

IN AN address before the Chicago Technical Conference, Ralph L. Wilcox, chief of the nonferrous metals branch of the Economic Cooperation Administration, discussed metal production and consumption.

Mr. Wilcox pointed out that most of the nonferrous metals were in general short supply in the United States during 1948. Inasmuch as this country has depended on imports to supplement domestic production, the entire current world's picture of the production-consumption position of most nonferrous metals has come within the purview of the ECA.

Reporting on the current world situation, Mr. Wilcox pointed out that lead stocks declined slightly in 1948 and the future outlook is for no substantial increase in world production. Both zinc and aluminum belong in the same category. He observed that the continued tight supply of lead was due to the leveling off of concentrate production. With regard to zinc, production in the United States may be expected to increase as much as 50,000 tons.

Copper: Production increased slightly last year keeping pace with consumption. No significant increase is likely in 1949.

Aluminum: Output in 1949 will be essentially the same as 1948.

Nickel: 1948 will be maintained during 1949.

Tin: If the trend of continued improvement is maintained in Malaya and Indonesia, world output may be restored to prewar levels by 1952.

Titanium: Ample supplies are now available for present and future increased demands.

Antimony: Supply remains tight. China is the principal source and little improvement in supply from that source may be expected in 1949.

Tungsten: Demand is tapering off and prices in world markets have decreased in recent months. There is a good possibility for increased output.

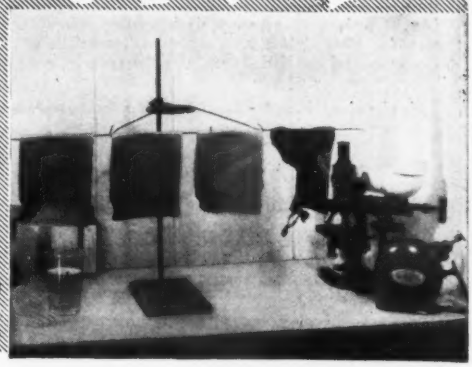
Molybdenum: Production should continue at the current or at a slightly improved rate.

Deep Fluorspar

M. L. Conn, superintendent and co-owner of the P.M.T. Fluorspar Mining Co., reports a new shaft has been sunk to a depth of 150 feet at his firm's Elizabethtown, Ill., mine. At this depth there is still a nice showing of fluospar which is reported unusual for this location.

ABC Brattice Cloth

WINS THE FLAME TEST!



SHOWN here are the results of a recent laboratory combustion test comparing: (1) ABC Regular Treatment Brattice Cloth; (2) ABC Dry Treatment Brattice Cloth; (3) A competitive dry treatment Brattice; and (4) A plastic Brattice material. Each was subjected to a blow torch flame for 30 seconds under identical conditions. The photograph was taken at the end of the 30 second period.

#1 ABC	#2 ABC	#3	#4
charred at point of contact with flame only. No afterglow.	charred at point of contact with flame only. No afterglow.	charred at point of contact with flame only. 20 second afterglow; first test. 36 seconds; second test.	badly decomposed. No afterglow.

Send for sample of ABC Brattice and make this flame test yourself. ABC is flameproof . . . and completely resists mildew, won't shrink, resists face shots and other external damage. Write for Bulletin 49.

AMERICAN BRATTICE CLOTH CORP.

210 BUFFALO ST. WARSAW, INDIANA

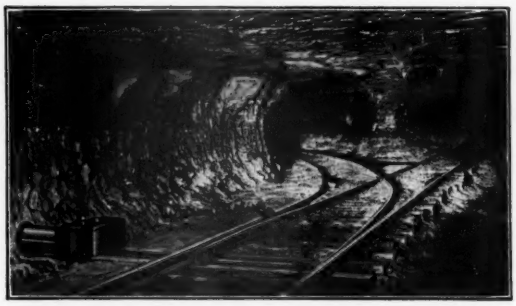
FULL SPEED PROFITS

WITH THE

"CANTON" AUTOMATIC

SWITCH

THROWER



Greatest number of trips in a given time is accomplished by the "Canton" Automatic Switch Thrower. This eliminates stopping for switch to be thrown, saves labor, and eliminates that accident potential. For further safety, signal lights show position of points, if blocked or split. All flashing and sparking at points of contact with trolley wheel are eliminated. This unit is as nearly fool-proof as is possible. Constructed on the solenoid principle in combination with patented automatic cutout, actuating mechanical connection to the Track Switch, instantly throwing the switch points against the rail on either side of track. Can be used as an automatic derailer, protecting life and property . . . operated usually by the motorman while traveling full speed ahead.

Write for complete descriptive catalog, using street and zone numbers.

Mechanical Track Cleaners—Rock Dusters—Automatic Doors—Car Transfers—Cable Splicers and Vulcanizers —Safety Signal Systems.

AMERICAN MINE DOOR CO.

2063 DUEBER AVE. **CANTON 6, OHIO**

Parmanco

MECHANICAL FEED HORIZONTAL DRILL WITH TRACTION DRIVE

Ten years of field test has proven that our power-feed design of direct, transmission and worm gearing with two-speed control will not only cut shot hole drilling time in half but also eliminates costly maintenance delays. V-belt drive to the power-feed with an additional ample clutch in that assembly gives absolute control of a drilling speed of two to three feet per minute with a retrieving speed of twenty-four feet per minute.

The Parmanco Horizontal is adapted to all forms of high-wall drilling, will handle a six-inch auger up to a distance of sixty feet or more and, by use of our patented augers with interrupted flights and secondary cutters, will drill an absolutely clean hole with a minimum of torque. It permits the drilling of a controlled-angle hole which makes possible a great saving of explosives through the cantilever effect of this controlled-angle drilled hole.

EFFICIENT STRIPPING STARTS
WITH EFFICIENT DRILLING

PARIS MANUFACTURING COMPANY
PARIS, ILLINOIS

Costly Atomic Power

In a recent statement before the International Lighting Exposition and Conference in Chicago, Ward F. Davidson, research engineer of Consolidated Edison Co. of New York, said that present costs of nuclear fuel are "prohibitively high" for general power production, in comparison with coal. He said there is a "slight chance" that the atomic fuel cost some day may match or become more favorable than the cost of coal.

In his address he pointed out that on the basis of "present fragmentary information" the over-all cost of an atom power plant would be two or three times that of a coal-burning station. Among other difficulties he described are those of getting material to transfer the heat from the reactor to produce steam. Molten metal is the only suitable fluid, he said. Lead is "not too bad" but gallium is currently the subject of much study.

The Eagle-Picher Co. is now one of the few companies engaged in extracting this rare metal. It is produced as a by-product in the refining of zinc. The current price of the metal of $3 per gram would make the price of a pound something over $1,300. Production of gallium is centered in the company's plant at Joplin, Mo.

Wheels of Government

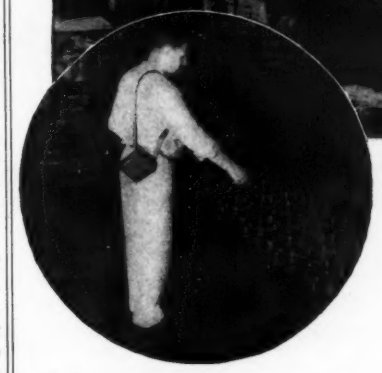
(*Continued from page* 102)

Director Boyd discussed a draft of an Interior Department bill providing incentive payments for exploration and development.

Coal Strike

On March 28, anthracite and bituminous coal miners returned to the mines following a two-week "memorial" strike called by UMWA president Lewis as an expression of opposition to the nomination of Dr. James Boyd as Director of the U. S. Bureau of Mines. When the strike was called Boyd's nomination was before the Senate Interior and Insular Affairs Committee. The Committee promptly approved the nomination by a 10 to 1 vote, following which the Senate gave its confirmation by a vote of 50 to 11 on March 22. Previously Senator Harry F. Byrd (Dem., Va.) declared, "The strike order is nothing less than an attempt to coerce and intimidate the Senate of the United States."

With labor legislation pending before the Congress, the general comment is that the strike clearly points up the need for action by the Government to curb the power of irresponsible labor leaders exercising monopolistic powers over the economy of the country.



and then a

SECOND LIFE!

MANY MINING ENGINEERS know that steel-built EDISON Nickel-Iron-Alkaline Storage Batteries are exceptionally dependable for rigorous mine haulage duty . . . but others have found they also have a *second* life!

The battery shown above is made up entirely of cells "retired" from locomotives of the Hudson Coal Company, Scranton, Pa. These cells range in age from 17 to 27 years and have served a full life in haulage duty, yet today they deliver 80 per cent of rated capacity. As a standby battery, they operate a bank of circuit breakers and carry emergency lamp loads of over 2800 watts. In effect this protection is free, thanks to EDISON second life.

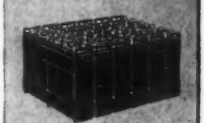
An example of economy? Yes — and an indication of the unmatched dependability of EDISON Batteries on the original job. *They're built stronger — last longer!*

ADVANTAGES OF EDISON NICKEL-IRON-ALKALINE BATTERIES: They're mechanically durable; electrically foolproof; quickly and easily charged; simple to maintain; not injured by standing idle.

EDISON

Nickel • Iron • Alkaline

STORAGE BATTERIES



EDISON STORAGE BATTERY DIVISION

of Thomas A. Edison, Incorporated, West Orange, N. J.

In Canada: International Equipment Co., Ltd., Montreal and Toronto

FOR PRODUCTION WELDING

a baker's dozen of

ANACONDA WELDING RODS

NAME OF ROD	APPROXIMATE COMPOSITION PER CENT	APPROX. MELT. PT. DEG. C.—DEG. F.		SUGGESTED WELDING METHOD AND USE
ANACONDA COPPER 372 (PATENT NO. 2,220,464)	98.85 Copper	1075	1967	Oxy-acetylene welding of copper.
DEOXIDIZED COPPER 939	99.9 Copper, deoxidizer present	1083	1981	Oxy-acetylene welding of copper.
SILVER BEARING COPPER 110	99 Copper, 1 Silver	1078	1972	Oxy-acetylene welding of copper.
SILICON COPPER 943	99.75 Copper, .25 Silicon	1083	1981	Oxy-acetylene welding of copper, copper to steel.
TOBIN BRONZE* 481	59 Copper, .50 Tin, remainder Zinc	885	1625	Oxy-acetylene welding of steel, cast iron, copper and its alloys, nickel and its alloys.
ECONOMY BRONZE*	Copper, Zinc, Tin	885	1625	Oxy-acetylene welding of steel and cast iron, etc.
ANACONDA 997 (LOW FUMING)	Copper, Zinc, Tin, Iron, Manganese, Silicon	870	1598	Oxy-acetylene welding of steel, cast iron, copper and its alloys, nickel and its alloys. Bearing surfaces.
MANGANESE BRONZE 984	Copper, Zinc, Tin, Iron Manganese	870	1598	Oxy-acetylene welding of steel, cast iron, copper and its alloys, nickel and its alloys.
SUPER-NICKEL 826	70 Copper, 30 Nickel	1225	2237	Oxy-acetylene welding of Cupro-Nickel and steel.
EVERDUR 1010	96 Copper, 3 Silicon, 1 Manganese	1019	1866	Oxy-acetylene and carbon arc welding of Everdur, copper and copper alloys. Special applications to steel.
PHOSPHOR BRONZE 903	95.75 Copper, 4.00 Tin, .25 Phosphorus	1050	1922	Carbon arc welding of phosphor bronze and copper. Special applications to steel.
PHOSPHOR BRONZE 310	89.2 Copper, 10.5 Tin, .3 Phosphorus	1000	1832	Carbon arc welding of phosphor bronze, copper and copper alloys. Bearing surfaces on steel.

*Reg. U. S. Pat. Off.

48161

ANACONDA
from mine to consumer

Announcing a "WHITE-BRONZE" Welding Rod

Anaconda Nickel Silver 828 is a 10% nickel welding rod for oxy-acetylene "white-bronze" welding of steel and cast iron. Information on welding procedure will be furnished on request.

THE AMERICAN BRASS COMPANY · General Offices: Waterbury 88, Conn.
Subsidiary of Anaconda Copper Mining Company · In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

Western States

Montana Chrome

Recently the Mining Association of Montana requested that Montana chrome properties operated during World War II be placed on a standby basis. From replies from members of Congress and from the U. S. Bureau of Mines, it was learned that 15 men, employed by the Bureau of Mines are now working at the chrome properties in Stillwater County to increase the estimated tonnages by further diamond drilling, to carry on experimental mining in order to discover a mining method that would furnish a richer ore than previously mined, and to supply the metallurgical division of the U. S. Bureau of Mines with representative lots of ore for laboratory and pilot plant tests. It is estimated that this work will take about three years.

Comstock Lode Operations

Properties of Central Comstock Mines Corp. at Virginia City, Nev., have been purchased by Chessher and Co. Plans are being made to install mill equipment and handle old waste dumps. C. L. Hazen, formerly superintendent for the Standard Cyaniding Co., is superintendent of the property.

New Cornelia Development

The New Cornelia branch of Phelps Dodge Corp., Ajo, Ariz., produced 113,000,000 lb of copper in 1948. Currently, concentrates are smelted at Douglas, Ariz., however, work on the new smelter for New Cornelia is being pushed. Concrete foundations for reverberatory furnace are complete; pouring for two converters and an anode furnace will soon be under way. At the mill a $185,000 thickener was recently completed for dewatering tailings.

Deming Concentrator Begun

In April the American Smelting and Refining Company started work on the construction of a $1,000,000 ore concentrating plant at Deming, N. M. The contract was awarded to the Stearns-Roger Manufacturing Co. at Denver, Colo. Announcement of the new project was made by D. J. Fope, Salt Lake City, Utah, general manager of the A. S. & R. Co. mining department. The new mill will replace one at Hanover, N. M., under lease for the past ten years from the Black Hawk Consolidated Mines Co. Capacity of the new mill will be 400 tons of ore daily. Lead concentrates will be shipped from the Deming mill to the El Paso, Tex., smelter, and zinc concentrates will go to Amarillo, Tex.

Chino Expansion

Chino Mines Division, Kennecott Corp., operating at Hurley and Santa Rita, N. M., has a $2,000,000 plant expansion project under way, to be completed by the end of this year. To meet the added demands for power in expanded operations in the huge open pit mine at Santa Rita, a new generator is being installed in the power plant at Hurley. Output of the new generator will add 12,500 kva to power circuits. Also under construction is new reverberatory furnace at the Chino smelter, to provide uninterrupted operations when one of the furnaces is down for repairs.

Olamont Milling at Jewel

Milling operations have been started by Olamont Mining Co. at its Jewel gold property west of Butte, Mont. With a 75 to 100 ton a day capacity, the new modern mill is centrally located so that ore from the company's other near-by claims may be easily handled. Underground, the company has completed sinking its shaft to the second level, where discovery of a high grade gold-silver is reported.

Ferromanganese Production

At the end of World War II production of ferromanganese from electric furnaces at the Great Falls Reduction Works of the Anaconda Copper Mining Co. ceased. Results of experimental work conducted in recent years to make the production of ferromanganese a permanent Montana industry are now being realized. On February 5, 1949, production of ferromanganese started in the first of a series of electric furnaces now under construction at the Anaconda Reduction Works. Two more furnaces were completed and put in operation during March and a fourth one is expected to be completed this summer. On a four furnace basis, production of standard grade ferromanganese is estimated at 1792 long tons per month.

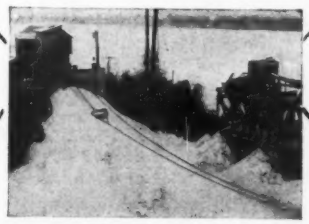
Activity at Aspen

Anaconda Copper Mining Co. is reportedly acquiring additional properties at Aspen, Colo., an almost abandoned mining camp of early days. A small plant was built by Anaconda to handle dump material, after drilling by the U. S. Bureau of Mines indicated downward extensions of ore bodies once considered bottomed.

California Scheelite

Production of tungsten was resumed recently at the Strawberry mine in Madera county, Calif., by a new company composed of H. A. Savage, A. R. McGuire, and Al Judson of Fresno, Calif. First shipment of scheelite concentrate has been delivered for sampling and sale. The mine is located about 85 miles northeast of Madera near the Clover Meadow Ranger Station. Since September, 30 men have been employed in operating the mine and the 50-ton mill.

LOW COST DIGGING and STOCKPILING



Small Sauerman Scraper stores and reclaims crushed material on ground between washery and drying plant.

ON work where materials are to be moved distances of several hundred feet or more from pits, ponds, banks or stockpiles, a SAUERMAN Power Scraper or Cableway is a great money-saver because it will dig, haul and place the materials in one operation.

Sizes range from small portable units designed for cheap handling of a small hourly tonnage of loose materials up to powerful machines that will take 15 cu. yds. at a bite and move this big load a distance of 300 ft. in about one minute.

Write for Catalog

SAUERMAN BROS., Inc.

540 S. Clinton St. CHICAGO 7

MINE MORE COAL

with *Femco*

Trolleyphone and Shot-Firer

Inspect these modern "tools" for cutting mine costs, upping production at

BOOTH A-236

THE CLEVELAND COAL SHOW

You'll See—and Hear:
how Femco Trolleyphone gives you constant supervision of moving cars or any place in the mine. Two-way communication that:

- **Stops accidents!**
- **Speeds all operations!**
- **Reduces power costs!**
- **Gets out more coal!**

Be from Missouri
Make this grueling vibrator (above) test of Trolleyphone's bell-clear talk under most severe mine car conditions.

Inspect for Yourself

the most practical, economical firing tool on the market:

Femco 1 to 10 Shot-Firer
Bureau of Mines Approval No. 1603

- **So compact and light it can be carried and operated on belt.**
- **Capacitor operated—no need to rely on speed of operation.**
- **Cannot be fired accidentally.**
- **Priced so low it quickly repays cost.**

FARMERS ENGINEERING & MANUFACTURINC CO.
549 BRUSHTON AVE. • PITTSBURGH 21, PA.
Specialists in Underground Electronics

Mill for Castle Mining Co.

Castle Mining Co. plans a new mill to treat gold-silver ores from its properties near Marysville, Mont., district. A tunnel to tap the veins at a depth of 400 ft below present workings is also contemplated. According to B. H. Castle, president, surface and underground prospecting is being carried on at its Broadwater County property in the Beaver Creek district and a new lead vein has been discovered at the Eldorado mine, 11 miles from the Drumlummon mine in the Marysville district.

McGowan Coal Mine Sold

The McGowan mine, formerly called the Blue Blaze mine, Consumers, Utah, was recently sold by Terry McGowan to the Hudson Coal Co. Mr. McGowan had operated the property for several years.

Phosphate Land Leased

The U. S. Interior Department has leased 1124 acres of phosphate land in Caridou County, Idaho, to J. R. Simplot and associates for $10.26 per acre for the first three units into which the area has been divided and $2.06 per acre for the other two areas, plus land rentals and royalties from phosphate production. The Simplot company is required, under the terms of the lease, to invest $50 per acre, or a total of $56,000 in actual mining operations, developments, or improvements, of which $18,000 shall be expended the first year. The Simplot lease is the first ever issued by the government providing for royalties on rock containing less than 30 percent phosphate. Simplot has recently purchased the kalunite plant in Salt Lake City and also operates a large fertilizer plant on the Fort Hall Indian reservation near Pocatello.

Rocky Mt. Coal Mining Institute

The 1949 annual meeting of the Rocky Mountain Coal Mining Institute will be held at Glenwood Springs, Colo., instead of Denver. The shift was voted by membership mail vote. Dates for the meeting are June 27-29. The institute is composed of coal operators in Utah, Wyoming, New Mexico, Colorado, with an affiliate Montana representative.

New Facilities at Stanford

Stanford University, Stanford, Calif., is now building an addition to its metallurgical and mining laboratories to provide new facilities for study and classroom space, plus increased office room. This new construction is another step in the University's program of modernization and improvements.

1949 Metal Mining Convention at Spokane

PLANS are going forward for the important 1949 meeting of the metal and nonmetallic mining industries, to be held at the Hotel Davenport, Spokane, September 25-28. Stanley A. Easton, president, Bunker Hill & Sullivan Mining & Concentrating Co., and Chairman of the Western Division of the American Mining Congress is providing an able guiding hand for this year's activities.

Under the leadership of William J. Coulter, general manager, Climax Molybdenum Co., and National Chairman of the Program Committee, an active group of State Chairmen will formulate a program designed to be of maximum interest to mining men across the country. Suggestions as to topics and speakers, which should be forwarded to the American Mining Congress, Ring Building, Washington 6, D. C., will be of great help to the Program Committee in drawing up plans for a comprehensive and valuable meeting.

Preparations for luncheon meetings, trips, the Annual Banquet, and other exceptional entertainment are being made by various Arrangements Committees, headed by Robert M. Hardy, president, Sunshine Mining Co., and Chairman of the General Arrangements Committee, together with Roger O. Oscarson, secretary, Northwest Mining Association, and Vice-Chairman of the General Committee.

Hotel reservations should be made through the Housing Committee, American Mining Congress Convention, Hotel Davenport, Spokane. Place your request for rooms now and arrange your work program and transportation schedule so that you may be certain to take part in the activities at Spokane beginning September 25.

Program Committee Chairmen

National Chairman
WILLIAM J. COULTER
Climax Molybdenum Co.

Alaska
J. A. WILLIAMS
Alaska Juneau Gold Mining Co.

Arizona
P. D. I. HONEYMAN
Inspiration Consolidated Copper Co.

California
H. A. SAWIN
Yuba Consolidated Gold Fields

Idaho
J. B. HAFFNER
Bunker Hill & Sullivan Mining & Concentrating Co.

Montana
KUNO DOERR, JR.
American Smelting & Refining Co.

Nevada
S. S. ARENTZ
Combined Metals Reduction Co.

New Mexico
G. F. COOPE
Potash Co. of America

Oregon
FAY I. BRISTOL
Bristol Silica Co.

South Dakota
N. P. GOODRICH
Bald Mountain Mining Co.

Texas
RICHARD A. YOUNG
American Zinc Co. of Illinois

Utah
LOUIS BUCHMAN
Utah Copper Division, Kennecott Copper Corp.

Washington
JOHN J. CURZON
Chelan Division, Howe Sound Co.

Tri-State and Mississippi Valley Area
ELMER ISERN
Eagle-Picher Mining & Smelting Co.

Lake Superior District
FERRY G. HARRISON
Hanna Iron Ore Co.

Eastern
GLOYD M. WILES
National Lead Co.

Mining Equipment Manufacturers
J. H. FULFORD
Jeffrey Manufacturing Co.

Anaconda Uses Laminated Guides

The first laminated mine guides have appeared on the production line at the Anaconda Copper Mining Co.'s new laminating plant at Bonner, Mont. For many years the company used solid timbers of Pacific coast fir for guides but investigation of the possibility of using laminated guides made of Western larch proved their suitability. In 1943 and 1944 the company installed approximately 2000 linear ft of this type of guide in a number of mines on an experimental basis. As a direct result of excellent performance, the company installed its own laminating plant at Bonner.

Garfield Refinery Construction

Construction at the new $16,000,000 electrolytic copper refinery of Kennecott Copper Corp., at Garfield, Utah, began to speed up in March. An anode casting plant, to furnish anodes to the refinery, will cost $3,000,000, with Kennecott sharing costs with the American Smelting and Refining Co. The refinery and other major additions made by Kennecott in Utah in recent years have required reinvestment of $45,000,000, exclusive of operating costs. Initial capacity of the refinery will be 12,000 tons of copper per month, cast in the form of wire bars. The plant will make available in Utah, for the first time, refined copper for fabrication.

Added Potash Output

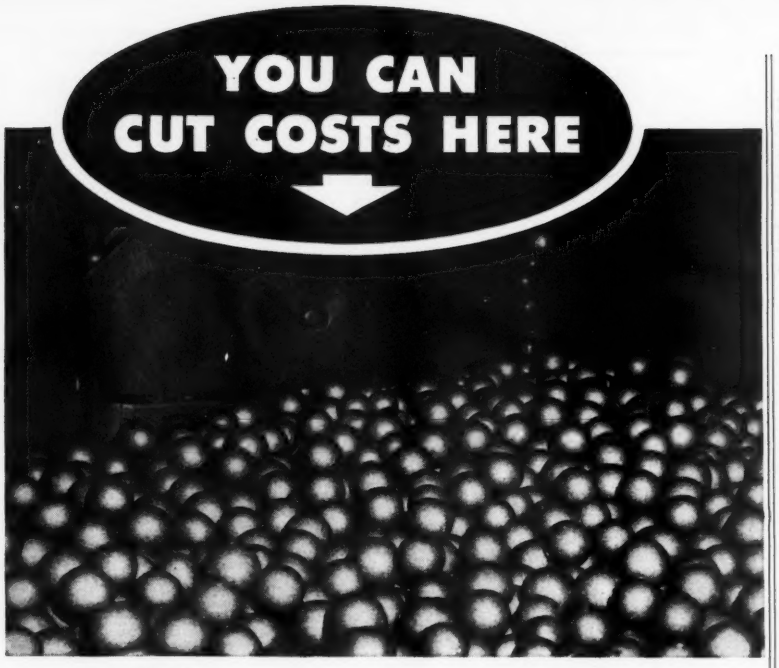
At Carlsbad, N. M., the International Minerals and Chemical Corp. is adding to its output of chemical grade potassium chloride with initial production now underway in a new refinery. The new plant, built at a cost of approximately $1,500,000, was constructed by the Stearns-Roger Mfg. Co. Preliminary layout design was handled by Western-Knapp Engineering Co. Output capacity is expected to be more than 20,000 tons annually when full production is achieved later this year.

Reviving Goldfield Mine

The Goldfield Mining Syndicate has moved in some preliminary machinery and has started stripping about 20,000 cu yd of overburden, old fill, and gravel at its property 40 miles east of Phoenix, Ariz. The holdings consist of 80 mining claims, including the old Goldfield mine, to the north of Superstition Mountain and in the area where many have sought the Lost Dutchman gold mine.

Additional interest in the area was created recently by the discovery of a narrow shaft opening of the type used in the old Spanish days. This opening had been filled and carefully concealed, and subsequent storms and floods had buried the original work under tons of desert wash.

The principals in the new venture are Alfred Strong Lewis and Thomas J. Russell. Lewis states that he and his associates are pinning their faith on a medium-grade operation, but are hopeful that some high-grade will be encountered in the vicinity of the old Spanish workings recently uncovered.



They're TRADEMARK REG.

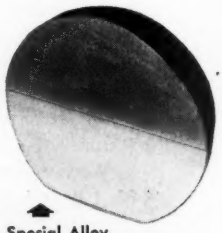
MOLY-COP

COPPER-MOLYBDENUM-ALLOY

Grinding Balls

Moly-Cop Grinding Balls are saving money for mill owners in practically every mining country in the world. This is why: They last longer. They retain their shape longer than average balls and give more tons per mill hour. They help cut power costs. They save on handling and freight costs because you need fewer charges. Cut your grinding costs. Specify Moly-Cop Grinding Balls.

Regular Carbon Steel Ball



Special Alloy Moly-Cop Ball

Compare Moly-Cop Balls With Others

See how the Moly-Cop Grinding Ball illustrated at right has a fine martensitic structure and extreme hardness that extends tc the inner core.

Carbon and Alloy Steel, Ingots, Blooms, Billets, Plates, Sheets, Merchant Bars, Steel Joists, Structural Shapes, Road Guard, Reinforcing Bars

Welded Wire Mesh, Wire Products, Wire Rods, Fence, Spring Wire, Nails, Rivets, Grinding Media, Forgings, Track Spikes, Bolt and Nut Products

SHEFFIELD STEEL CORPORATION

HOUSTON KANSAS CITY TULSA

Export Representatives:

Canada: Ellsworth Wood, 10015-110 St., Edmonton, Alberta

All other Countries: ARMCO INTERNATIONAL CORPORATION Middletown, Ohio

New Antimony Deposit

Another antimony ore deposit has been found in Idaho. According to Ernest Oberbillig, he, Gilbert Peterson, and Herman Miller located the deposit on the middle fork of the Boise river, 20 miles southeast of Atlanta in June 1947. Up to date the mine's output has been 70,000 lbs of antimony per month.

Morning Glory Mines Close

Hampered by snow and continuous extremly cold weather, the Morning Glory Mines, operators of the Keystone mine and Haywire mill at Sylvanite, on the Yaak river, near Troy, Mont., suspended operations for the winter. Local reports indicate that $30,000 development capital will be required for spring work.

Sinking Begun on Fluorspar Lease

The Riverside Copper Mining Co. of Idaho has taken a sub-lease on a group of fluorspar claims near Superior, Mont., from Jay Beetles, of Colorado, who holds an original lease from the Coeur d'Alene Extension Mining Co. On the Riverside lease on the original discovery of fluorspar, sinking was begun on April 1. Most of the fluorspar mining in this district has been from open pit operations.

Calera Development Hindered

Development of the Howe Sound Mining Co.'s cobalt mine in the Blackbird district of Idaho has been delayed because of snowslides and severe weather conditions, which caused temporary suspension of operations and isolation of the company's camp. Sixty major sized snowslides were reported on the outlet road leading to the district. Snowslides also played havoc in the Coeur d'Alene mining district, in some instances temporarily closing mines and milling plants.

Archer Mine Gets Furnace

Equipped with a new furnace by Southern California interests, the Archer quicksilver mine south of New Idria, Calif., is reported producing high grade ore. The cinnabar was trucked to the New Idria plant for a year, but the low price of mercury in 1948 and closing of the New Idria furnaces forced the Archer operators to install their own plant.

Work carried forward from the 250-drift in the Sciocchetti-Berg mercury mine is reported to have opened the downward extension of a rich

vein found at a higher elevation last summer. The property is equipped with a six-pipe retort and located in Griswold canyon, south of Panoche Valley. Quicksilver deposits have been worked in the region more than 80 years, with much of the ore classed as high grade.

New Mexico Mining Association

On February 10-12, the New Mexico Miners and Prospectors Association held an outstanding meeting in Santa Fe, N. M. In addition to four general sessions, featuring a series of papers by operating executives, engineers, and geologists, a number of luncheons and other entertainment provided adequate relaxation.

Officers and directors were elected for the ensuing year: George A. Warner, president; Joseph H. Taylor, vice-president; Dr. Vincent C. Kelley, second vice-president and Jack C. Pierce, secretary-treasurer.

On the occasion of the annual banquet, Dr. James Boyd, director, U. S. Bureau of Mines, was the speaker.

Map Distribution Center

In a recent announcement, Director W. E. Wrather, of the U. S. Geological Survey, stated that a map distribution center in Denver, Colo., has been completed. Beginning on April 1, 1949, topographic and geologic maps of areas west of the Mississippi river were available on request from the U. S. Geological Survey, Denver Federal Center, Denver, Colo.

Zinc Find at Park Utah

An important ore find has been made by the Park Utah Consolidated Mines Co., during an eastward extension in the Ontario mine at Park City, Utah, P. H. Hunt, mine manager announced early in March. Found during exploration below the 1500 level, the ore runs approximately 38 percent lead, 16 percent zinc and 12 oz of silver. The body has been described as quite large.

Reeves MacDonald Makes Progress

Installation of equipment for the 1000-ton per day operation of the Reeves MacDonald Mines Ltd., is progressing rapidly, Lewis P. Larsen, president, recently reported at Spokane, Wash. The total cost of equipment will be approximately $1,000,000. Underground a 1000-ft ventilation compartment raise has been advanced 700 ft and is slated for completion before spring. The power line was connected in January and other construction is going forward satisfactorily.

Hecla Tailings Plant Sold

Zanetti Brothers, owners of the Galena custom mill in Wallace, Idaho, have purchased what remains of the Hecla tailings after a fire Christmas night, and will rebuild it in the form of a 500-ton flotation plant for the treatment of river tailings.

Lazy Boy Working

Victoria Gold Mines, Inc., has constructed three miles of road leading to its Lazy Boy group of eight claims, four miles southeast of Oatman, Ariz. The Lazy Boy claims have been developed by a double-compartment shaft 200 ft in depth, with various crosscuts and laterals. Ore shipments in the past were from development work and are said to have returned from $9 to $12 a ton in gold.

According to R. P. Jones, president of the company, as soon as new mining equipment is in place, additional lateral work will be undertaken and plans made for regular production.

Victoria Gold expects to construct a modern milling plant on its Victoria group of claims, about 2.5 miles from the Lazy Boy. This mill will treat ore from both the Victoria and the Lazy Boy mines, as well as a limited amount of custom ore from the district.

Be *sure* with Pure Lubrication

Investigate the advantages of Pure Oil lubricants and service for the protection of vital mining machinery. Our lubrication engineers will be glad to discuss your problems —without obligation.

THE PURE OIL COMPANY

35 E. Wacker Drive, Chicago 1, Illinois

See us at the
COAL SHOW
Booth No. 1360

PURE

Manufacturers Forum

Connector Test

A fluoroscope machine has been installed by the Mines Equipment Co. to provide final testing for electrical connectors. A fluoroscopic examination insures shipment to the consumer of electrical connectors and receptacles with correct wire lay, insulation thickness, and adequate soldering.

Self-Cleaning Magnet

Automatic separation of magnetic and non-magnetic materials with an Alnico plate magnet has been accomplished with the self-cleaning permaplate recently developed by Dings Magnetic Separator Co., Milwaukee. This permanent non-electric magnet unit is designed to provide automatic protection to equipment susceptible to tramp iron damage. It can be installed over conveyor belts or chutes.

Truck-Mounted Compressor

An improved 160 cfm "Auto-Air" truck-mounted compressor has been announced by Davey Compressor Co., Kent, Ohio. The unit is driven direct from the truck engine through a power take-off. The V-type compressor has three low pressure cylinders and one high pressure cylinder. The 1600-lb unit, including take-off, is 46 in. long, 67 in. wide, and 50 in. high

Air Control

A new valve designed by Ross Operation Valve Co., Detroit, is designed to provide safe control of air power exposed to fire hazards in mines. The valve is generally actuated by a pilot valve which may be hand, foot, or cam operated thereby eliminating electrical hazards.

Coal Barge Movement

In a program to improve navigation facilities on the Monongahela river to permit increased barge transportation of coal to the Pittsburgh district from mines in West Virginia, the Dravo Corp., Pittsburgh, Pa., has begun reconstruction of lock No. 2 on the Monongahela river at Braddock, Pa. Eventually there will be at Braddock one lock chamber 110 ft wide by 720 ft long and one 56 ft wide by 360 ft long. Dravo is also building a new dam and locks at Morgantown in line with the same program.

Reflecting Hose

The Quaker Rubber Corp., Philadelphia, recently introduced a hose wrapped with a tough, flexible plastic tape which reflects light from the smooth coating of glass beads spread upon it. Use of the spiral reflecting tape is designed to increase the visibility of the hose and thereby reduce accidents and damage.

High Speed Hoist

An electric hoist drive capable of lifting 12 tons of ore 2300 fpm—nearly 30 mph—is being built by the General Electric Co. at their plant in Schenectady, N. Y. The hoist is scheduled for shipment next fall to the Anaconda Copper Mining Co. at Butte, Mont., for use on the new Kelley shaft. At full speed, it will lift ore through the Kelley from a depth of 4335 ft in about two minutes.

A G-E announcement said the d-c hoist motor is rated at 3000 hp at 60 rpm. The company also will supply a motor-generator set driven by a 3500 hp motor, a complete control and switch-gear type starting system and other equipment.

Big Dipper

Early in March, Lukenweld, the machinery making division of Lukens Steel Co., Coatesville, Pa., announced completion of a 55-cu yd dipper bucket. It is the largest ever made of manganese-molybdenum and austentic steel plates, one of three inches thick, sheared and shaped, and otherwise formed, assembled, and welded.

The construction of the huge dipper follows a new design evolved in collaboration with development engineers of the Hanna Division, Pittsburgh Consolidation Coal Co. It will be used in strip mining operations near Adena, Jefferson County, Pa.

D-C Packaged Power

Direct-current power is produced from selenium tanks ranging in capacity from one to 100 kw manufactured by Clark Electronic Laboratories, Palm Springs, Calif. Containing no tubes, the selenium rectifiers are reported to have long life and high efficiency.

Diesel Lubricant

An additive-type lubricant designed for use in high-speed Diesel engines has been developed by D-A Lubricant Co., Inc., Indianapolis, Ind. The lubricant is designed to counteract the harmful effect of high sulphur fuels and to eliminate certain sludging and wear conditions. Use of the new product D-A "Extra-Treated" Diesel oil, is indicated for Diesel engines operating on fuels with sulphur contents in excess of 0.5 percent.

Mine Jacks

Two new jacks have been introduced by the Star Jack Co., Chicago, which are said to incorporate revolutionary time and labor saving features. Designated as Models MRT (mine roof timber jack) and MSP (mine safety post jack) these new jacks are made of an aluminum alloy which makes them considerably lighter than jacks constructed of malleable iron and steel. The setting-up time is speeded by the use of a spinning hand wheel.

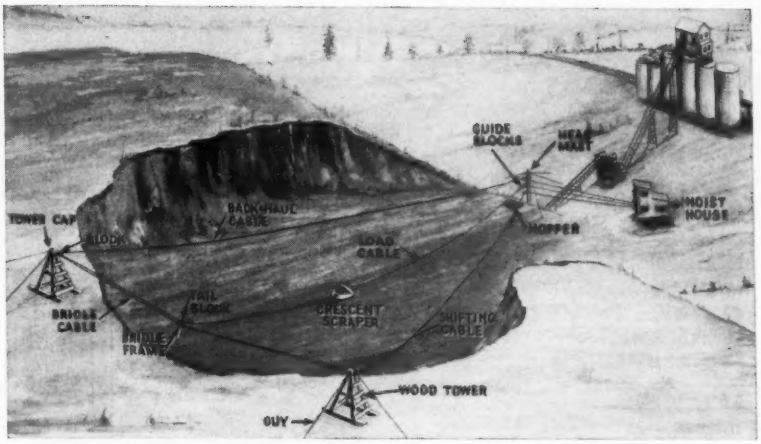
CORRECTION

In the December issue of MINING CONGRESS JOURNAL, due to an error in copy, the Mighty Midget rock duster of American Mine Door Co. was reported as having distributed more than a ton of dust per "minute." Obviously the performance of this powerful unit should have been described "as distributing more than a ton of dust per hour."

Diesel Training

A comprehensive training program has been launched for retail sales personnel by the Detroit Diesel Engine Division, General Motor Corp. Sales engineers from its distributor and dealer organizations are attending a series of two-week conferences in Detroit, Mich. Objective of the program is to provide these men with the latest information on sound industrial engine application techniques as applied to the General Motors Series 71 Diesel engine.

Conference sessions are divided into the two major parts. First week of training is devoted to a thorough study of the basic GM Diesel engine, its components, and operating characteristics. Second and final week is spent in proper analysis of power requirements, suitable drive arrangements, and important factors to consider in recommending GM Diesel for driving specific types of machinery. An "Application Data Manual" designed for the course, contains charts, tables, diagrams, and step-by-step procedures aimed at taking the guess work out of industrial power diagnosis.



Sauerman Bros., Inc., Chicago, has developed a new series of power drag scrapers designed to permit rapid shifting of the tail end of the machine. The elevated tail bridle assembly operates in conjunction with a three-drum hoist

— *Announcements* —

Link-Belt Co. has moved its Spokane warehouse and district sales office to new and larger quarters at North 1303 Washington St., Spokane.

* * *

International Explosives Corp. has moved its business office from Reno, Nev., to the Sparks, Nev., plant.

* * *

I-T-E Circuit Breaker Co. and its subsidiary, Railway and Industrial Engineering Co., have established a Philadelphia district branch office at Wilkes-Barre, Pa., under the direction of **Lee S. Spaulding.**

* * *

Mac L. Crews has recently joined the industrial sales field force, and **Henry S. Carter** the mining sales field staff of **Mine Safety Appliances Co.**

* * *

Richard H. Koehler has been appointed advertising manager of the **Stearns Magnetic Mfg. Co.**

Frederick S. Bartlett was recently named factory manager of the Bristol, R. I., plant of **U. S. Rubber Co.** according to announcement by C. W. Higbee, manager of the wire and cable department.

* * *

F. B. Baca, former plant manager of the Hardsocg Division of **Cardox Corp.** was recently appointed to the post of chief engineer of the division.

* * *

M. S. Downes has been appointed general sales manager of the Railway Division of the **Timken Roller Bearing Co.** and **J. E. McCort** has been named assistant general sales manager of the division.

* * *

Leslie Southgate will represent the **Detroit Diesel Engine Division,** General Motors Corp., as northeastern zone sales representative.

Established 1902
HOFFMAN·BROS·DRILLING·CO.
CONTRACTORS
DIAMOND CORE DRILLING
PUNXSUTAWNEY, PA.
Our specialty—Testing bituminous coal lands
Satisfactory cores guaranteed

CORE DRILLING
ANYWHERE
"We look into the earth"
PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH 20, PA.

— Index To Advertisers —

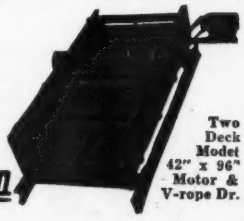
	Page
Allis-Chalmers Mfg. Co.	110
Aluminum Co. of America	12
American Brass Co., The	132
American Brattice Cloth Corp.	129
American Car & Foundry Co.	8–9
American Cyanamid Co.	34–35
American Cyanamid Co. Explosives Department	4
American Mine Door Co.	130
American Pulverizer Co.	74
American Steel & Wire Co.	17
Anaconda Wire & Cable Co.	76
Atlas Powder Co.	81
Bituminous Coal Institute	96
Bucyrus-Erie Co.	33
Cardox Corp	16
Centrifugal & Mechanical Industries, Inc.	29
Chicago Pneumatic Tool Co.	123
Clarkson Mfg. Co.	105
Cummins Engine Co., Inc.	15
Davis Co., Nelson L.	20
Deister Concentrator Co., The	127
Denver Equipment Co.	124
DuPont de Nemours & Co., Inc., E. I.	14
Edison & Co., Inc., Thos. A.	131
Electric Storage Battery Co., The	27
Elreco Corp., The	115
Euclid Road Machinery Co., The	13
Fairmont Machinery Co.	107
Farmers Engineering & Mfg. Co.	134
Flexible Steel Lacing Co.	125
Gardner-Denver Co.	108
General Cable Corp.	11
General Electric Co.	2–3
Goodman Mfg. Co.	30–31
Hamilton Rubber Mfg. Corp.	103
Harnischfeger Corp.	21
Hendrick Mfg. Co.	118
Hewitt-Robins, Inc. Robins Conveyor Division	116–117
Heyl & Patterson, Inc.	128
Hoffman Bros. Drilling Co.	139
Independent Pneumatic Tool Co.	120
Ingersoll-Rand Co.	97–98–99–100
International Harvester Co.	106
Jeffrey Mfg. Co.	77–78–79–80
Joy Mfg. Co.	72–73
Kennametal Inc.	32
Link Belt Co.	Second Cover
Link Belt Speeder Corp.	36
Mack Trucks, Inc.	26
Macwhyte Company	122
Mines Equipment Co.	22
Mine Safety Appliances Co.	Back Cover
Mosebach Electric & Supply Co.	126
Mott Core Drilling Co.	140
Myers-Whaley Co.	1
National Electric Coil Co.	109
National Malleable & Steel Castings Co.	28
National Mine Service Co.	75
Ohio Brass Co.	18–19
Paris Mfg. Co.	130
Pennsylvania Drilling Co.	139
Pure Oil Co.	137
Roberts & Schaefer Co.	6–7
Sauerman Bros., Inc.	133
Sheffield Steel Corp.	136
Standard Oil Co. (Indiana)	10
Tamping Bag Co.	121
Timken Roller Bearing Co., The	23
United Engineers & Constructors, Inc.	104
United States Rubber Co.	24–25, and Third Cover
Universal Vibrating Screen Co.	140
Western Machinery Co.	113
Woomer & Associates, J. W.	119
Young, L. E.	119

UNIVERSAL SCREENS and UNIVIBE RIDDLES

Vibrating Screens and Vibratory Riddles, in many sizes and types, all priced most reasonably. . . . Tried, Proved and Guaranteed Products. Leaders in Screening Field Since 1919.

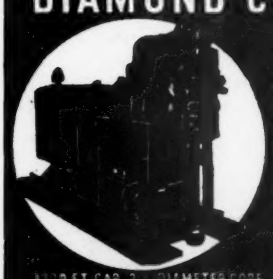
Write for Catalog on Screens and Screening

UNIVERSAL VIBRATING SCREEN CO.
RACINE WISCONSIN



Two Deck Model 42" x 96" Motor & V-rope Dr.

DIAMOND CORE DRILLING
CONTRACTORS



TESTING COAL AND ALL MINERAL PROPERTIES - USING OUR LIGHT GASOLINE DRILLS.. THEY SAVE FUEL AND MOVING COSTS.. WE GUARANTEE SATISFACTORY AND PROPER CORES..

PRE-PRESSURE GROUTING FOR MINE SHAFTS... GROUND SOLIDIFICATION FOR WET MINE AREAS BY OUR STOP GROUT METHOD. WATER WELLS AND DISCHARGE HOLES DRILLED AND GROUTED... ELECTRIC DRILLS FOR INSIDE MINE DRILLING...

1200 FT CAP. 2" DIAMETER CORE

MOTT CORE DRILLING CO.
HUNTINGTON, W. VA.

7 Tough Tests prove these YELLOW JACKET Cables are safe

IN THE LABORATORY United States Rubber Company scientists developed a special, tough, pressure cured Neoprene jacket, which provides maximum resistance to abrasion, cutting, heat, moisture, and especially oil. In addition, U. S. Royals must pass 7 grueling "torture" tests before being certified as safe for your toughest jobs. Write Electrical Wire and Cable Department, United States Rubber Company, 1230 Avenue of the Americas, New York 20, N. Y.

Available in black or the new gold

U.S. RUBBER
SERVING THROUGH SCIENCE
United States Rubber Company

U. S. ROYAL GOLD MINING MACHINE AND LOCOMOTIVE CABLES

Photo courtesy
U. S. Steel Corp.

unfailing light

every hour
on the job!

EDISON ELECTRIC CAP LAMPS

From start to finish of every shift, the Edison Electric Cap Lamp furnishes the miner with completely dependable illumination—powerfully brilliant, effectively directed at the working area, lighting every detail of the job for better production. Unfailing performance is *built* into the Edison Lamp—may we demonstrate the details?

M·S·A

MINE SAFETY APPLIANCES COMPANY

BRADDOCK, THOMAS AND MEADE STREETS . . . . . PITTSBURGH 8, PA.

At Your Service: 48 BRANCH OFFICES in the UNITED STATES

MINE SAFETY APPLIANCES CO. OF CANADA LIMITED · Toronto, Montreal, Calgary, Winnipeg, Vancouver, New Glasgow, N. S.
MINE SAFETY APPLIANCES CO. (S.A.) (PTY.) LTD · Johannesburg, South Africa; N'Dola, No. Rhodesia; Bulawayo, So. Rhodesia

Representatives in Principal Cities in Mexico, Central and South America · CABLE ADDRESS, "MINSAF" PITTSBURGH